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ABSTRACT

Steroids have become one of society's "short cuts" to athletic prowess and success. This guide includes information and teaching materials for educators and others who work with youth on how to teach that steroids are drugs, that drugs can harm and kill, and that a "no-use" policy applies to steroids as well as to alcohol and other drugs. It is designed to educate students about the dangers of anabolic steroids and other supposed body-enhancing drugs. Chapters are: (1) How to Use this Guide; (2) What are Steroids? (3) The History of Steroid Use; (4) Reasons for Steroid Use; (5) Social Influences that Encourage Steroid Use; (6) How Steroids are Used; (7) Risks and Side Effects of Steroid Use; (8) Signs and Symptoms of Steroid Use; (9) Sources of Steroids; (10) Legal and Ethical Issues of Steroid Use; (11) Testing for Steroids; (12) The Role of Schools in Addressing Steroid Use; (13) The Role of Parents in the Prevention of Steroid Use; and (14) Other Ergogenic Aids. Appendices include references, a steroid fact sheet, glossary, resources, suggested readings and suggested audiovisuals. Transparency masters are also included. (JEJ)

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STEROIDS

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STEROIDS

AND OTHER ERGOGENIC AIDS: A RESOURCE GUIDE

Provided by the
Virginia Department of Education
Youth Risk Prevention Project
P. O. Box 2120
Richmond, Virginia 23216-2120

October, 1993

Dear Colleagues:

As part of the Virginia Department of Education's continuing mission to provide technical assistance to local school divisions, I am pleased to present to you this document, **Steroids and Other Ergogenic Aids: A Resource Guide**. *A 1989 amendment to the Drug-Free Schools and Communities Act of 1986 requires that elementary and secondary schools include information on anabolic steroids in their alcohol and other drug use prevention programs. This document is intended to provide such information to parents, educators, and others who work with youth in professional, volunteer, and parenting roles.*

Steroids have become one of society's "short-cuts" to athletic prowess and success; however, we as parents and educators must send our young people a clear message that steroids are drugs, that drugs can harm and kill, and that a "no-use" policy applies to steroids as well as to alcohol and other drugs. These pages will provide you with current information and teaching materials to educate students about the dangers of anabolic steroids and other "supposed" body-enhancing drugs.

I applaud you for your continuing efforts to educate our youth and to create a truly drug-free Virginia. Please know that the Department of Education is always ready to assist you in your efforts.

Sincerely yours,

Joseph A. Spagnolo, Jr.
Superintendent of Public Instruction

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FOREWORD

This document is provided as a service of the Virginia Department of Education Youth Risk Prevention Project. The purpose of this Resource Guide is to provide current information on anabolic steroids and other ergogenic (body-enhancing) aids to educators and others who work with youth in professional, volunteer, and parenting roles. Information in this guide should be incorporated into existing drug prevention education curricula within the framework of comprehensive school health education programs.

A 1989 amendment to the Drug-Free Schools and Communities Act of 1986 (DFSCA) requires that information on anabolic steroids be included in alcohol and other drug use prevention education programs in elementary and secondary schools. This Resource Guide provides such information, as well as information on the use of other ergogenic aids, which, along with anabolic steroids, are growing in use among young people, especially athletes. Athletics and physical fitness are very important in today's society. Sometimes, however, society sends the wrong messages about strength and fitness to its young people, who, then, may resort to chemical methods of strength-building, such as anabolic steroids and other ergogenics. These substances have far-reaching physical and psychological consequences that youth need to know. Young people are spending a lot of money on and putting a lot of faith into body-enhancing drugs. Therefore, parents, teachers, counselors, and peers need to be informed about the dangers of anabolic steroids and other ergogenics and convey this information to youth.

ACKNOWLEDGMENTS

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The Bureau of School Health Education and Services of the State of New York Education Department for granting permission to the Virginia Department of Education to edit, revise, adapt, and expand their 1991 publication, *Steroids: A Resource Guide,* for use in Virginia.

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HOW TO USE THIS GUIDE

This guide is intended to provide accurate, up-to-date information on the use of steroids and other body-enhancing drugs as well as prevention strategies for schools, parents, and communities.

Each topic related to steroid use has been reviewed and is addressed based on current information presented in scientific reviews found in the literature. For most sections there are additional suggested readings. Some of these readings provide additional scientific support to the summarized section, and others are from the lay press and provide a humanistic view of the problems associated with steroid use.

Several topic areas have their key points summarized in the margin of the page to facilitate the use of this guide in instruction. Charts, lists, and diagrams, appropriate for making overhead transparencies as teaching tools for some topics, are included in the Transparency Masters section and are also referenced in the margin of corresponding text pages. This information is intended to be useful to all people who work with youth and is to be incorporated into existing alcohol and other drug use prevention education programs.

Additional information may be found in the following sections in the back of this guide:

References - a list of resources on steroids that are referenced in the text with footnotes.

Steroid Fact Sheet - a list of basic steroid facts that can be reproduced as a one-page handout and distributed following presentations on steroid use.

Glossary - a list of steroid-related terms and definitions found in the text in bold print.

Resources - a list of state and national resources on steroid education, prevention, and training.

Suggested Readings - a list of books, articles, and pamphlets for additional information on steroid use with purchase information when available.

Suggested Audiovisuals - a list of videos on steroid use with purchase information when available.

Transparency Masters - master copies of charts and diagrams suitable for making transparencies for use in presentations on steroid use.

If additional copies of this guide are needed, contact the Virginia Department of Education, Youth Risk Prevention Project, P. O. Box 2120, Richmond, Virginia 23216-2120.

WHAT ARE STEROIDS?

Anabolic-androgenic steroids, one of a group of ergogenic, or performance-enhancing drugs, are synthetic derivative forms of the male hormone **testosterone**, a naturally occurring hormone produced and secreted by the testicles. Testosterone is necessary for the differentiation, growth, and development of the male sexual organs. Male secondary sex characteristics, such as deepening of the voice and male pattern hair growth, as well as aggressiveness and sex drive, are all caused by the action of testosterone. Like testosterone, synthetically produced steroids have these same **androgenic**, or masculinizing, effects.

Testosterone also has an **anabolic,** or constructive, quality. It increases the rate of amino acid transfer into the cells, producing subsequent changes that help the body retain dietary protein. This protein causes the growth of muscles, bones, and skin. In adolescents, an increase in bone thickness and calcium deposition leads to greater length and size of the bones. However, testosterone also promotes an earlier uniting of the bone **epiphysis** to the shaft, causing premature growth stoppage. This is but one of the long-term negative side effects of steroid use that are discussed in a later chapter.

Although drug companies have attempted to disassociate the **androgenic** (masculinizing) effects of testosterone from the **anabolic** (building) effects, no preparation is currently available that provides the anabolic effect without the androgenic component.

Unless taken in large doses, testosterone is relatively ineffective given orally. Most of the drug is metabolized by the liver, making it highly **toxic**, or harmful, to the liver. Therefore, many users use needles and syringes to inject the drug.

In the blood, 98-99 percent of testosterone is bound to proteins, making it unusable. Only about one to two percent of testosterone is free, or available for use. Since the by-products of the drug are excreted mostly through the urine, the use of steroids can be detected through urinalysis. Some anabolic steroids are made using an oil base that slows excretion from the body. Therefore, even limited steroid use can be detected through testing done months after the initial use, especially when oil-based preparations are used.

Terms:

- **Anabolic-androgenic steroids**: chemical derivatives of the male sex hormone testosterone.
- **Testosterone**: the naturally occurring male sex hormone necessary for the differentiation, growth, and development of the male sexual organs and male secondary sex characteristics.
- **Epiphysis**: an end of a long bone, as in the long bones of the legs.
- **Androgenic**: masculinizing, or causing the development of male sex characteristics in the body (deepening voice, hair growth, etc.).
- **Anabolic**: helping to build muscles or other body tissues.
- **Toxic**: harmful; destructive.

Major Classes of Anabolic Steroids:

- Oral tablets
- Injectable, oil-based liquids
- Injectable, water-based liquids

See Chart #1, Effects of Testosterone on the Body, in the **Transparency Masters** section.

The only uses of anabolic steroids approved by the Federal Drug Administration (FDA) are for the treatment of certain types of **anemia**, certain kinds of **breast cancer** in women, certain disorders such as **muscular dystrophy**, **endometriosis**, **osteoporosis**, and **hereditary angiodema**, a rare disease involving the swelling of some parts of the body. When steroids are taken therapeutically, that is, prescribed and monitored by physicians to treat specific health conditions, they can have medical benefit. However, the doses and patterns of administration used by the self-administering athlete often differ markedly from those used therapeutically--often by ten times. Steroid users who think that the prescribed five-milligram pills help build muscle often assume that ten milligrams, or two pills, will add even more muscle. Anabolic steroids should not be confused with **corticosteroids**--the anti-inflammatory drugs used widely to treat muscle and joint problems and skin rashes.

Therapeutic Uses of Anabolic Steroids:

Prescribed and monitored by doctors to treat:

- **Anemia:** deficiency in the oxygen-carrying material of the blood.
- **Breast cancer:** the presence of malignant neoplasms in the breast tissue.
- **Endometriosis**: inflammation of the membrane lining the uterus.
- **Osteoporosis**: a condition especially affecting elderly women that results from a decline in bone mineral content, making bones susceptible to fracture.
- **Hereditary angiodema**: a type of allergic reaction to some insect bites, foods, viruses, etc., causing the swelling of some parts of the body.
- Disorders, such as **muscular dystrophy**.

Terms:

- **Corticosteroids**: a family of potent, versatile hormones produced naturally in the adrenal glands or synthesized in the laboratory and used therapeutically to treat inflammatory and allergic disease.

Joining in the condemnation of steroids are national medical associations: the American Medical Association, the American Academy of Pediatrics, the American College of Sports Medicine, the American Osteopathic Academy of Sports Medicine, and the American Academy of Family Physicians.

In Virginia, as in over 25 states, anabolic steroids are considered by law to be controlled substances (Section 18.2-248.5 *Code of Virginia).* Therefore, as such, they may be dispensed only by prescription. Since there is no indicated use for steroids in building muscles in healthy individuals, few physicians will risk their licensure to prescribe these drugs for athletes and body builders. Thus, a black market has flourished to illegally produce and sell steroids to both athletes and nonathletes who have become interested in their bodybuilding effects.

Extent of Use

Until recently, much of the interest in anabolic steroids has focused on their use by athletes, both male and female, professional and amateur--swimmers, body builders, weight lifters, track-and-field competitors. However, a 1988 study among male high school seniors revealed that 6.6 percent of male high school seniors and perhaps as many as 500,000 adolescents nationwide have used steroids.[1] This study also revealed that, of the 3400 male high school seniors polled in 46 public and private schools, 38.3 percent started using steroids before they were 16 and had taken the drugs for five or more **cycles**. Additionally, nearly 40 percent had injected oil-based versions of the drug.

In 1990, another study of high school seniors by the National Institute on Drug Abuse showed that nearly 3 percent--5 percent of males and 0.5 percent of females--had used steroids at some time in their lives. Also, the same survey showed that nearly as many students within the last year used steroids as used crack cocaine and that more students used steroids than the hallucinogenic drug PCP.[2]

For the first time in the spring of 1992, the state of Virginia gathered statistics concerning steroid use as a part of the Virginia Youth Risk Behavior Survey conducted randomly statewide among 1,640 students in grades 9-12. The survey results indicated that among male students, 4.3 percent of 11th- and 12th-graders, and 4.9 percent of 9th- and 10th-graders have taken steroid pills or shots without a doctor's

Sports Organizations Outlawing Anabolic Steroids:

- United States Olympic Committee
- National Football League National Collegiate Athletic Association
- International Amateur Athletic Federation
- International Federation of Body Builders

Medical Associations Condemning Use of Anabolic Steroids:

- American Medical Association
- American Academy of Pediatrics
- American College of Sports Medicine
- American Osteopathic Academy of Sports Medicine
- American Academy of Family Physicians

Terms:

- **Cycle**: the taking of steroids for 6-12 weeks, then staying off them for an equal amount of time before beginning another "cycle."

See Chart #2, Why Do Athletes Take Drugs, in the **Transparency Masters** section.

THE HISTORY OF STEROID USE

The dramatic growth of steroid use in recent years raises many questions regarding just how steroids gained their bodybuilding reputation. Both clinical and nonclinical uses of steroids have led to an exaggerated belief in their benefits.

In the 1930s, physicians used anabolic steroids in attempting to restore vitality in aging men who were presumed to have low testosterone levels. Anabolic steroids were also tried clinically during and after World War II in an effort to speed the rehabilitation of prisoners of war who were the victims of enforced starvation. Although the therapy was successful, the side effects proved to be so severe that the use of steroids was discontinued. The nonclinical use of steroids also dates back to World War II when steroids were first used in an attempt to increase aggressiveness in German soldiers. Later, in the 1950s, the Russians gave their athletes (both men and women) the male hormone testosterone that apparently helped competitors build muscle. As a result, the Russians dominated many international sports at the time, especially the 1952 Olympics.

The political impact of the Cold War heightened athletic competition and was the impetus for an American physician to develop a variation of a drug related to testosterone that would give U. S. competitors the same physical advantage as the Russians. The physician developed for use by weight lifters a form of anabolic steroid that was supposed to build muscle while minimizing the masculinizing side effects of testosterone. At first, only weight lifters and heavy-weight throwers used the drug; however, very quickly, use spread to football players, swimmers, and other track-and-field competitors (e.g., discus, shot-put, javelin throwers) who were in search of larger, stronger muscles.

People began experimenting on themselves with steroids, and reports of what was considered a "wonder drug" were published in weightlifting and bodybuilding magazines. Physicians, therefore, were inundated with requests for prescriptions for steroids. As the medical literature about the side effects resulting from steroid use mounted, however, physicians stopped prescribing them as readily.

Since 1975 steroids have been banned by the U. S. Olympic Committee, followed by other groups, such as the National Football League, the National Collegiate Athletic Association, the International Amateur Athletic Federation, and the International Federation of Body Builders.

Clinical and Nonclinical Use of Steroids

1930s
- To restore vitality in aging men

1940s
- To speed rehabilitation of WWII POWs who had suffered starvation
- To increase aggressiveness in German soldiers

1950s
- To "bulk up" or build muscles in bodybuilders, swimmers, football players, and other athletes, especially the Russian weightlifters who dominated the 1952 Olympics.

1970s
- Increased demand by athletes in other sports
- FDA took steroids off the market
- National and international sports and medical organizations ban steroids

1980s
- Nonathletes discover bodybuilding effects of steroids
- A black market flourishes for illegal production and sale

prescription one or more times during their lives. Among female students, 2.4 percent of 11th- and 12th-graders and 1.8 percent of 9th- and 10th-graders indicated they have taken steroid pills or shots without a doctor's prescription one or more times during their lives. The Virginia survey did not have enough response of schools or students for the data to be weighted. Even though the selection process was based on strict random selection, the low response rates of school divisions and schools may have introduced bias in the process. Therefore, it would not be valid to generalize the findings from this survey to all high school students in Virginia. It is only valid to attribute the results to the 1,640 students who responded to the survey. However, these findings should provide insight into youth health-risk behaviors, such as steroid use, and encourage localities to conduct their own surveys or participate in future youth risk behavior surveys on a biennial basis. Students need to be educated about the long-term, devastating effects of steroids so that they will not fall prey to the false promises of the drug.

1992 Virginia Youth Risk Behavior Survey results :

...4.3% male 11th- and 12th-graders

...4.9% male 9th- and 10th-graders

...2.4% female 11th- and 12th-graders

...1.8% female 9th- and 10th-graders have taken steroid pills or shots without a doctor's prescription one or more times during their lives.*

*data not weighted

REASONS FOR STEROID USE

Steroid use is an outgrowth of drug-taking by society as a whole and by athletes specifically. Because of extensive media coverage, athletes, especially professional ones, have become noteworthy when they use and abuse drugs for recreational use -- to "get high" or "have fun," when they become addicted to drugs that they have used as painkillers in order to "play hurt," and when they use drugs as performance enhancers. Young athletes who see so much attention given to this kind of drug use by some of their sports heroes may follow these poor role models and take drugs themselves.

The attraction of drugs such as steroids is that they do work. They build muscle mass and strength when combined with a weight-training program and a high-caloric diet. Therefore, they are attractive to young athletes who feel that steroid use gives them an advantage over other athletes. However, no scientific studies show that steroids actually enhance performance. Anabolic steroids do not improve agility, skill, or cardiovascular capacity. Although some athletes claim that steroids help them recover from injuries, there is also no hard data to support this claim. Those who abuse steroids are mainly body builders or athletes involved in football, power-lifting, wrestling, swimming, and track-and-field events requiring upper body strength (e.g., the shot-put). Some young people also take steroids just to "look good" by attaining a muscular physique.

Of those reporting steroid use in the previously mentioned 1988 survey, 47.1 percent indicated that their main reason for use was to improve athletic performance. Another 35.2 percent indicated that they did not intend to participate in a school-sponsored activity. However, these users still may compete in athletic competition primarily at the amateur level or on an individual basis in activities such as body building and weightlifting. Physical appearance was given as the main reason for steroid use among 26.7 percent of this user group. Although it is not an accepted medical practice, the use of anabolic steroids to treat or prevent injury was reported by 10.7 percent of users.[3]

For years the scientific community refused to recognize that the use of anabolic-androgenic steroids had the ability to enhance muscle size and strength. Through experimentation, many who used the drug found this scientific information inconsistent. Several individuals found that muscle size and strength could be enhanced through the

Reported Reasons for Steroid Use Among 3400 Male High School Seniors

- To increase athletic performance - 47.1%
- To improve appearance - 26.7%
- To treat or prevent injury - 10.7%
- Other - 15.5%

...1988 Survey

"There is little compelling scientific evidence to support the concept that steroids enhance athletic performance."

...Theodore J. Cicero and Lynn H. O'Connor, 1990

use of these drugs. As a result of these experiences, many steroid users considered the statement that steroids do not enhance size and strength to be a lie. They, therefore, assumed that the information regarding the health risks was also in error. Although there is much that is not known about steroids, there are demonstrated short-term and long-term health risks.

As a society we have come to idolize the star athlete, or at least the appearance of the muscular athlete. From early childhood, boys learn that the ideal man looks something like Mr. Universe. Saturday morning television is filled with cartoon characters with huge, abnormally muscled heroes. Sports stars, such as Olympic sprinter Ben Johnson and former Seattle Seahawk linebacker Brian Bosworth, are known to have taken the steroid shortcut. Hence, it should be to no one's surprise that many physically underdeveloped people are willing to pay large sums of money for pills and injectables that have the ability to enhance their physical appearance.

With the high cost of a college education today, some aspiring athletes also see steroids as a way to improve their athletic performance and thereby obtain a college scholarship. Also, the idea of playing professional sports and making the "big money" of a professional athlete further lures young athletes to try to enhance their physical abilities with steroids.

"I can only say that the guy on steroids may be bigger and stronger than you right now, but ten years from now you'll be visiting him in the hospital. Today's glory is tomorrow's sorrow."

... Pat Croce, physical conditioning coach and physical therapist, Philadelphia Flyers, 76ers, and Phillies

"...and away go all your dreams. Even the most muscular athlete can't win from a hospital bed."

...Michael James, "Bulk Up, Up," *High School Sports*

"The drug is the biggest liar."

...Aaron Henry, former steroid user

SOCIAL INFLUENCES THAT ENCOURAGE STEROID USE

We live in a drug-using society. The growing problem of steroid use, as well as the use of alcohol and other drugs, reflects the chemical-using behavior of the larger community. This behavior is accepted and tolerated throughout much of society. For this reason, efforts to prevent steroid use by youth must be multifaceted and must address the social norms and institutions that influence young people.

Athletics is only a mirror of other segments of society where a drive for wealth and prestige may supersede health and ethical concerns. A recent position paper issued by the University of Minnesota addresses the powerful social influences that encourage the use of anabolic steroids.[4] Addressing these underlying messages can form the basis for discussions and other prevention strategies focused on reducing the risk of steroid use.

Social Influences That Encourage Steroid Use:

- Concept of "sports as big business" rather than "sports as fun"
- Spirit of "winning at all costs"
- Overemphasis on physical attributes
- Eagerness to gain a competitive edge over one's opponent
- Endless search for shortcuts
- Valuing money and appearance above health
- Acceptance of drugs as problem-solvers and "quick-fixers"
- Financial rewards of winning in athletics
- Focus on physical appearance as a primary measure of self-esteem

See Chart #3, Messages That Encourage Steroid Use, in the **Transparency Masters** section.

HOW STEROIDS ARE USED

Presently, there are about 15 anabolic steroids used in the United States. Steroids are taken orally in pill form or are injected if they cannot be absorbed orally. Injectable steroids are generally oil based and have a longer lasting effect. Those taken orally have a more immediate effect; however, they appear to be more damaging to the liver as mentioned before in this guide. Whereas **injectable** steroids are **metabolized** over a period of weeks, orally **ingested** steroids are metabolized by the liver in about 24 hours.

The normal prescribed dose of steroids for medical purposes is 1 to 5 milligrams per day. Steroid abusers, however, usually use **stacking** or **pyramiding** techniques during a steroid **cycle**. During a 12-week cycle, an individual may begin with low doses of one steroid. As the cycle progresses, the individual "stacks" and increases doses, resulting in the taking of hundreds of milligrams a day. During approximately the fifth through seventh weeks, the use of these drugs will peak.[5] During this peak, the individual uses megadoses of steroids. These steroids, when "stacked," often produce over one hundred times the medically approved dosage.[6] After the seventh week, abusers gradually reverse the pyramid and stacking procedure.

When the 12-week cycle is completed, abusers, will observe a four- to eight-week drug-free period called a **drug holiday**. Usually this drug holiday occurs just prior to a competition. During this time it is common for any newly acquired size and weight to decrease. Hence, it is usual for abusers to lengthen a cycle and shorten the drug holiday.

Strength and Hypertrophy Gains

Several controversies exist regarding steroid use. The first controversy is whether or not anabolic steroid treatments can cause abnormally rapid strength and **hypertrophy**, or abnormal muscular enlargement. In 1984, Haupt and Rovere evaluated 24 well-documented studies on the effects of anabolic steroids on strength, hypertrophy, and athletic performance.[7]

Terms:

- **Injectable**: introduced into body tissue or a blood vessel by way of a needle.
- **Metabolized**: physically and chemically processed by the body.
- **Ingested**: taken in by mouth and swallowed.
- **Stacking**: the practice of taking more than one anabolic steroid at a time for their multiple effects.
- **Pyramiding**: the practice of beginning with a low dosage of one steroid, and adding other steroids.
- **Cycle**: the taking of steroids for 6-12 weeks, then staying off them for an equal amount of time before beginning another "cycle."
- **Drug holiday**: a period of four to seven weeks during which an individual involved in taking steroids is drug-free.
- **Hypertrophy**: abnormal enlargement of a muscle or muscle group.

See Chart #4, Commonly Used Anabolic Steroids, in the **Transparency Masters** section.

Based on this review, the authors state that anabolic steroid teatments in normal young males are capable of causing abnormally rapid increases in strength, muscular hypertrophy, and lean body weight if accompanied by intense strength training before and during the steroid treatment, if a high protein diet is followed, and if the strength changes are measured with single repetition-maximum techniques. In 1987 these findings were accepted by the American College of Sports Medicine.

Terms:

- **Lean body weight**: the weight of an individual excluding fatty tissue.

Steroids will significantly increase strength and muscular development under these conditions:

- Intensive weight-lift training is done before and continued during the steroid regimen.
- A high-protein diet is followed.
- Gains are measured by a single repetition-maximum technique for those exercises with which the individual trains.

See Chart #5, Strength and Hypertrophy Gains Caused by Steroid Use, in the **Transparency Masters** section .

RISKS AND SIDE EFFECTS OF STEROID USE

Many of the studies regarding steroid use have been too short in duration or conducted with dosages much lower than those taken by many users. Additionally, in studies of this type, exposing human subjects to extreme dosages of steroids for long periods similar to those dosages used by many athletes cannot be defended. Hence, the side effects demonstrated by the controlled research are probably not indicative of the true potential for the irreversible side effects that may result from the consistent heavy use of steroids.

Even with such limitations, a host of negative side effects have surfaced. Although the majority of these side effects in males appear to reverse themselves when anabolic steroid treatments are discontinued, some of those affecting the female appear to be irreversible.

The side effects of steroid use in females are often immediate and irreversible. Women begin to develop masculine characteristics, including a shrinkage of the breast tissue, increased facial and body hair, and menstrual irregularities. After a period of approximately six months, females can expect deeper voices, darker facial and body hair, thinning of the hair leading to baldness, wider shoulders, and changes in skin color. Women also commonly experience irreversible clitoral enlargement. Female infants of mothers on steroids have also grown external genitals similar to the male scrotum. Because of the irreversible nature of these side effects, the female pays a high price for the small increase in muscle size and strength provided by steroids.

Additionally, people who take high doses of steroids may experience a variety of emotional and psychological changes. Users often report feelings of irritability and aggression. These changes are sometimes referred to in the literature as **"roid rage."** During these periods, situations that normally would not bother an individual can, with steroids, create strong feelings of anger and hostility. Thus, steroid users often have difficulty with others because of these uncontrolled feelings. Unfortunately, many times these feelings are expressed through some type of physical violence. Anxiety, paranoia, and disturbed sleep patterns have also been reported by many people who use steroids.[8]

Side Effects in Males:

- decreased **libido** (sex drive)
- **gynecomastia** (development of female breasts)
- testicular **atrophy** (degeneration or wasting away)
- an enlarged prostate
- decreased sperm count
- **sterility** (inability to reproduce sexually)
- **impotence** (inability to have sexual intercourse)

Side Effects in Females:
(some are irreversible)

- reduction in breast size
- increase in facial and body hair
- menstrual irregularities
- deeper voice
- darker facial and body hair
- thinning of the hair
- wider shoulders
- an enlarged clitoris

Side Effects in Many Users:

- **"Roid rage"**: feelings of irritability, unexplained aggressiveness outbursts of anger, and overreaction to incidents that would usually be ignored as a result of steroid use
- Physical violence
- Anxiety
- Paranoia
- Disturbed sleep patterns

See Chart #6, Side Effects Experienced By Steroid Users, in the **Transparency Masters** section.

Additional Risks of Steroid Use

Although the use of steroids by healthy individuals is a relatively new phenomenon, there is little doubt in the medical community that the repeated intake of anabolic steroids places the user at an increased risk for medical problems. Clearly, the risks associated with long-term steroid use are not worth the short-term benefits. The specific patterns of these difficulties depend upon the sex and age of the user and the specific drug taken, including the dosage and length of use.

In addition to the short-term side effects and the long-term consequences of consistent steroid use, there are other problems to contend with, specifically steroid-related injuries and suppression of the immune system.[9] Although anabolic steroids tend to make muscles grow, the connective tendons and ligaments do not grow. This larger, heavier muscle, when contracted, may put extra stress on the tendons and ligaments and may cause injury.[10] Additionally, because of this unnatural growth, the cartilage that separates and liberates the bones and joints is more likely to become arthritic. Muscles that are too heavy will cause excessive wear and tear on the cartilage, resulting in bones rubbing together. Bones that rub together create an arthritic condition that is extremely painful.

Often overlooked is the risk of contracting HIV/AIDS from injecting steroids. Any time that needles and syringes are shared, the individuals sharing these **works** are at an increased risk for contracting HIV/AIDS, hepatitis, or other blood-borne diseases. Since needles and syringes are not readily available to most people in Virginia, people who use injectable forms of the drugs are often forced to share needles and syringes. This practice places these individuals at an increased risk for contracting a blood-borne disease such as HIV/AIDS.

Long-term use of steroids also appears to jeopardize the natural functioning of the **hepatic**, **cardiovascular**, and **reproductive systems**. As mentioned before, the **hepatic** system is severely distressed by steroid use, especially when steroids are taken orally. One study reported that cysts and liver tumors, which are rare in the general public, were found in 59 of 155 steroid users. Several deaths have also been reported as a result of steroid-related liver failure.[11]

Subjective side effects of steroids, reported in nearly all the various studies:

- increased or decreased **libido** (desire to have sex)
- headache
- dizziness
- muscle spasm
- nausea
- irritability
- aggression
- **euphoria** (elevated mood)
- abnormal fluid accumulation in the body (**edema**)
- acne (especially on the back)
- skin rash
- inflammation of the urethra
- increased urine output
- male pattern baldness
- excessive hair growth

Other Risks of Using Steroids:

- HIV/AIDS (from sharing needles if injected)
- Hepatitis

Terms:

- **Works**: needles, syringes, and other paraphernalia used to inject illicit street drugs
- **Hepatic**: pertaining to the liver
- **Cardiovascular**: pertaining to the heart and blood vessels
- **Reproductive**: pertaining to the bearing of offspring

See Chart #7, Subjective Side Effects of Steroid Use, in the **Transparency Masters** section.

Although strong scientific evidence is just beginning to appear in the literature, early studies seem to indicate that steroids are also devastating to the heart. Several studies have shown that steroid use results in a significant reduction of high density lipoproteins (HDLs) in the blood. High density lipoproteins (also called the "good cholesterol") play a critical role in removing plaque from the walls of the arteries.[12] A reduction of HDLs increases the risk for developing **atheroscelerosis**, or hardening of the arteries. Enlarged hearts and high blood pressure have also been associated with steroid use.[13]

In the lay press there have been several articles highlighting individuals who attribute the early onset of cardiovascular disease to steroid use.

Steroid use also affects the reproductive system.[14] Testicular **atrophy**, accompanied by a reduction in sperm production, can be regarded as a pathologic side effect of steroid use. There is also a reduction in seminal fluid volume, which may be a result of a dysfunctional prostate gland.[15]

Several studies have documented the long-term effects of steroid use during adolescence. One of the problems associated with steroid use during adolescence is the premature closure of the **epiphyses** of the long bones. Once these plates close, growth permanently ceases, bringing an adolescent's height to a standstill.[16]

Steroids and Addiction

The addictive qualities of steroids are beginning to gain attention in the literature. Although steroids have been used by some individuals for long periods of time, addiction to steroids has not been recognized. However, according to the American Psychiatric Association (1987), chronic use of anabolic steroids parallels the commonly accepted criteria for psychoactive substance use disorder.[17] In many cases: (1) the hormones are used over longer periods than desired; (2) attempts are made to stop use without success; (3) substantial time is spent obtaining, using, or recovering from the drug; (4) use continues despite knowledge of significant psychological problems caused by the hormones; (5) characteristic withdrawal symptoms occur; and (6) the hormones are often taken to relieve these withdrawal symptoms.

Terms:

- **Atherosclerosis**: a chronic disease in which thickening and hardening of arterial walls interferes with blood circulation
- **Atrophy**: degeneration or wasting away of a cell or organ of the body
- **Epiphyses**: growth plates of the long bones

Long-term Risks of Steroid Use:

- HIV/AIDS (from sharing needles when injecting steroids)
- Liver tumors
- Increased risk for heart disease due to the reduction of HDLs (high density lipoproteins) that remove plaque from artery walls
- Infertility due to a reduction in sperm production
- In adolescents, closure of the bone plates of the long bones, causing premature growth stoppage.

See Chart #8, Long-Term Risks of Steroid Use, in the **Transparency Masters** section.

SIGNS AND SYMPTOMS OF STEROID USE

Unless an individual has tested positive for steroids through urinalysis, one cannot be sure that the person has been taking steroids. However, there are several physical signs that may indicate that steroids are being used.

Athletes who use steroids in conjunction with a weight-training program may be identified by their quick muscle and weight gains. A person who gains 20-30 pounds more in body weight in a relatively short time (four to eight weeks) should be suspected of using steroids.[18] Due to an increase in water retention, the individual may also appear to have a bloated or puffy face and upper body. Another indication of steroid use is severe acne, especially if the onset is rapid and the acne is on the back. Other symptoms may include spotted or blotchy skin, purple or red-colored spots on the body, severe sweating (even at rest), unexplained darkening of the skin, and persistent bad breath. Behavioral changes may also be a indication of steroid use, especially unexplained aggressiveness and overreaction to incidents which would usually be ignored ("roid rage"). One should not assume that an individual is using steroids, however, until all the facts are known.

Indications of Steroid Use:

- Rapid muscle/weight gain (e.g., 20- to 30-lb. increase over a 4- to 8-week period)
- Puffiness, or bloating, especially of the face and upper body
- Severe acne, especially if acne is on the back and the onset is rapid
- Spotted or blotchy skin
- Purple or red-colored spots on the body
- Unexplained darkening of the skin
- Persistent bad breath
- Unexplained aggressiveness and other behavioral changes ("roid rage")

"There may be a greater number of cases of anabolic steroid-induced psychiatric illness in this country than had been assumed...these effects may pose a danger not only to the steroids user but to the public at large."

...David Katz and Harrison Pope, Harvard University

See Chart #9, Indications of Steroid Use, in the **Transparency Masters** section.

SOURCES OF STEROIDS

Although anabolic steroids are produced and distributed for prescribed medical uses by pharmaceutical companies in the United States, the demand for these drugs without prescriptions has spawned a black market. Until recently the black market acquired legitimately manufactured pharmaceuticals through theft and fraudulent prescriptions.

Due to increased demand for steroids and better law enforcement, black marketers have turned to new sources, counterfeit drugs made either in Mexico or in Europe and smuggled into the U.S. or drugs produced in underground labs in the U.S. Many of these black market drugs containing unknown or inappropriate ingredients are frequently manufactured in substandard environmental conditions. For this reason, they pose an even greater health risk because they are manufactured without controls. Often these counterfeit drugs are packaged with deceiving labels that lead the buyer to believe that the drugs have been manufactured by legitimate companies.

Steroid users and dealers typically "connect" in private gyms, clubs, and fitness centers where weightlifting occurs. Steroids are also often distributed to athletes by other athletes and, in some cases, by coaches. Nearly 20 percent of steroid users, however, obtain the drugs from health-care professionals, including doctors, pharmacists, and veterinarians. Anabolic steroids can also be obtained through mail-order catalogs under a cloak of secrecy.

As in recreational drug use, the peer group has a strong influence in introducing an individual to steroids. Individuals who use steroids subtly form cliques, then distance themselves from nonusers. People who choose not to take steroids will not be included in this steroid-taking clique. The socialization process occurring within this group and the easy access to these drugs adds to the severity of the problem.

Sources of Steroids and Other Ergogenics:

- Doctor's prescription (a small percentage)
- Friends
- Mail order (especially from Europe and Canada)
- Black Market
  - Underground labs in U.S. and Mexico
  - Other athletes
  - Product stolen or diverted and distributed through gyms and sports trainers
  - Physicians, pharmacists, and salesmen divert samples

See Chart #10, Sources of Steroids, in the **Transparency Masters** section.

LEGAL AND ETHICAL ISSUES OF STEROID USE

Most experts on the steroid topic agree that two things are needed to help solve the problem of steroid use. One is education. The other is the development of stronger laws controlling the sale and availability of steroids.

Both federal and state governments have enacted laws to control the use of anabolic steroids. In 1985 the Food and Drug Administration took nonprescription steroids off the legal market, making their use without a doctor's order illegal. The 1988 Congressional Anti-Drug Abuse Act made the distribution or possession of anabolic steroids for nonmedical reasons a federal offense. Distribution to minors is a prison offense. The Crime Control Act of 1990 toughened legislation by placing more than two dozen steroids, as well as amphetamines and barbituates, on Schedule III of the Controlled Substances Act of 1970. Penalties for steroid use and trafficking were increased. Five-year prison terms can face persons convicted of unlawful use or distribution of steroids. Strict production and recordkeeping regulations regarding steroids were placed on pharmaceutical firms to halt diversion of anabolic steroids onto the black market. This federal act takes precedence over all state law.

Over 25 states, including Virginia, have passed laws and regulations to control steroid use. Many others are considering similar legislation. Virginia law (*Code of Virginia* Sec. 18.2-248.5) makes it illegal to knowingly manufacture or distribute or possess with intent to manufacture or distribute anabolic steroids without a prescription.[19] Steroids are considered a Schedule III drug, meaning they have some accepted medical uses, a moderate to low risk for physical dependency, a high risk for psychological dependency, and, thus, potential for abuse. Penalties for the manufacture or distribution of anabolic steroids are 1-10 years imprisonment, or up to 12 months in jail and a fine of up to $20,000, either or both.[20]

As noted before, the National Collegiate Athletic Association (NCAA), the United States Olympic Committee (USOC), and the National Federation of State High School Associations (NFSHSA) have gone on record in opposition to the use of steroids. Violation of these prohibitions carries penalties, such as loss of team eligibility and forfeiture of awards won.

Steroids are against the law!

Code of Virginia, Section 18.2-248.5. Illegal stimulants and steroids; penalty.

" A. Except as authorized in the Drug Control Act (Section 54.1-3400 et. seq.), Chapter 34 of Title 54.1, it shall be unlawful for any person to knowingly manufacture, sell, give, distribute or possess with intent to manufacture, sell, give or distribute any anabolic steroid.

A violation of subsection A shall be punishable by a term of imprisonment of not less than one year nor more than twenty years or, in the discretion of the jury or the court trying the case without a jury, confinement in jail for not more than twelve months or a fine of not more than $20,000, either or both.

B. It shall be unlawful for any person to knowingly sell or otherwise distribute, without prescription, to a minor any pill, capsule, or tablet containing any combination of caffeine and ephedrine sulfate. A violation of this subsection B shall be punishable as a Class I misdemeanor."

See Chart #11, Goals of Athletics, in the **Transparency Masters** section.

In today's society, many individuals are influenced by a pervasive "win-at-all-costs" attitude. This mentality is often promoted by coaches and communities. Competition to some has no value if the final score does not indicate a victory.

Steroid use to gain an advantage over an opponent is not only physically and mentally harmful but also unethical. It is the equivalent of cheating to gain an advantage over an opponent. At risk is not only the integrity of competition but also the overall self-respect of the athlete.

It is important that all athletic programs be administered by educators who value the benefits of competition and who will also ensure that students have the opportunity to gain these benefits through programs that are not only fair and equitable in every way but also drug-free.

"It's like having the answers to a test. If you're taking a test and you don't have the answers and everyone else does, do you think that's fair?"

(Edwin Moses, two-time Olympic Gold Medalist, on the topic of steroids.[21])

See Chart #12, Reasons for Not Using Steroids and Other Ergogenic Aids, in the **Transparency Masters** section.

TESTING FOR STEROIDS

One of the most controversial areas surrounding the topic of steroid use is drug testing. The decision of whether or not to test individuals for specific drugs should be made only after considerable study. Issues that complicate drug testing include the legal ramifications, the cost of testing, and the reliability of testing procedures.

Steroid testing is usually done through urine samples although blood samples and hair samples may be used. The most common testing, urine testing, is done through gas chromatography/mass spectrometry (GCMS). The GCMS procedure is the only technique that provides legally admissible data. In this process, steroids are extracted from the urine, separated from one another, and characterized by ions. Since steroid molecules are not found in nature, the tests are accurate; but the laboratory technician must be highly skilled. Two urine samples are needed for a positive confirmation. Using the GCMS procedure, steroids can be detected in one part per billion up to nine months after use. The cost of this test ranges from $100 to $150, and test results can be received in two days to six weeks. There are currently six centers in the U.S. that use GCMS.[22]

Although almost everyone agrees that drug-free competition is desired, drug testing to help achieve drug-free competition is highly controversial. Organizations must study and answer some very basic questions, including who will develop drug testing policy, who will implement this policy, who will be tested, what drugs will be tested for, and what consequences will occur in the event of positive results. If a testing program for drugs is to be adopted, it should not be designed and used for punitive reasons. The choice to test must be coupled with a strong, comprehensive, and ongoing drug prevention, education, and rehabilitation program.

Drug testing is currently being conducted by the NCAA, U.S. Olympic Committee, and some high schools. Legal challenges are being met on all levels, and the legality of testing is still unclear. The American Civil Liberties Union (ACLU), which opposes drug testing in principle, claims that drug testing is degrading, an invasion of privacy, an illegal search, and in opposition to the 4th Amendment to the United States Constitution.

"If the purpose of sports is to encourage and reward excellence, then drugs and other performance aids should be banned because they do not reflect the forms of human excellence that sports is intended to honor."

(Dr. Thomas H. Murray, Case Western Reserve University)[23]

Almost all institutions involved in drug testing operate under the policy of informed consent. In high schools where drug testing is conducted, the student and parent/guardian must sign a waiver indicating that they understand the drug testing program and freely consent to participate in it and undergo all required tests. Most programs offer counseling to offenders. Many proponents of drug testing claim that testing has become a way of life in many businesses, the military, and government and that an attempt to prohibit drug testing in athletic competition is unwarranted. Some people are of the opinion that drug testing places an unfair focus on athletes and that their constitutional rights are being violated.

THE ROLE OF SCHOOLS IN ADDRESSING STEROID USE

Every school needs to have a comprehensive policy concerning alcohol and other drugs, including steroids, with specific guidelines related to interscholastic athletes. The policy and the procedures must be communicated to and be well understood by everyone. Virginia schools should assess how their local school policies on alcohol and other drug use follow the model policy suggested by the Virginia Department of Education in the 1993 publication, *A Framework for Prevention: A Guide to Developing A Comprehensive School Policy Concerning Alcohol and Other Drugs*. School board policies should promote a consistent "no-use" message concerning all drugs, including alcohol and steroids.

Education is the main objective in fighting the problem of steroid use. Education needs to be targeted not only towards students but also towards parents, teachers, and coaches. Training of staff in steroid education is critical. Administrators, health and physical education teachers, counselors, and coaches must receive training to enhance their knowledge of steroids, including prevention and intervention strategies. The prevention activities of all these groups need to be coordinated to ensure that students are receiving consistent messages.

Teachers of health and physical education play a key role in steroid education and prevention. They have a significant responsibility to provide accurate, factual information on steroids and to help students develop positive self-images and appropriate life skills to resist the pressures to use steroids. Decision-making and stress-management techniques, as well as positive alternatives to all chemical use, are key elements to any prevention program.

Steroid education should be incorporated into existing broad-based prevention efforts that reflect a student's whole environment of school, home, and community. Parents need to be educated and involved to understand the powerful role modeling they exhibit and to help them reinforce at home the school-based prevention efforts.

It is important that parents, students, school administrators, teachers, coaches, and community members unite in developing attitudes, actions, and activities that enable every child to perform at his/her own peak performance level through sensible nutrition, physical training, and positive reinforcement.

Strategies for Schools

- Develop a School Board alcohol and other drug use policy with a consistent "no-use" message concerning all drug use, including steroids.
- Train staff members (administrators, teachers, counselors, coaches), parents, and students in steroid education through seminars, clinics, sports camps, printed materials, and PSAs on radio and TV.
- Include parents in steroid education programs.
- Provide school-wide coordination of all steroid education efforts.
- Require coaches to hold pre-season meetings to include information on steroids.
- Make coaches aware of the legal ramifications of encouraging steroid use.

See Chart #13, Strategies for Schools, in the **Transparency Masters** section.

The Role and Influence of the Coach

Coaches traditionally have been responsible for the physical, mental, emotional, and social well-being of athletes. Coaches also retain control over those areas associated with improving athletic performance. However, a factor that extends beyond a coach's control and may have a significant effect on an athlete's performance is drug use.

For the coach to successfully address the issues associated with drug use, he/she must understand why athletes take drugs, recognize the signs and symptoms associated with drug use, establish and uphold policies regarding the use of drugs, work to develop and implement alcohol and other drug use prevention programs, and be a drug-free role model himself/herself.

Athletes consider the coach to be a knowledgeable and credible source from whom to seek information. Coaches must be honest with young people when talking about steroids.

Many times young people are given the impression that it is only the lack of size and strength that is keeping them from their potential. Coaches need to refrain from making comments, such as, "If he beefs up a little, he will really be tough next year." These impressions, no matter what the original intention, may be all the encouragement an individual needs to start using steroids.

To avoid sending mixed messages, coaches must take a stand against all alcohol and other drug use, including steroid use. Silence, many times, is perceived as condoning use. Regardless of the coach's personal or professional experience with steroids and other ergogenics, he/she must establish and maintain policies that discourage the use of all body-enhancing aids. The ethical and legal implications, along with the potential for future health problems associated with steroids and other ergogenics, must be contrasted to the minimal benefits to be gained from their use.

When firm guidelines are established at the onset of a program, athletes are at an advantage when they try to refute the persuasive arguments they are likely to encounter from others who attribute their successes to using steroids.

"There's no glory dying for a sport."[24]

. . . Steve Courson, former NFL lineman - - Pittsburgh Steelers and Tampa Bay Buccaneers

"You ask a high school coach whether he'd rather have a 160-pound or a 190-pound lineman, and you know which one he's going to want."

...Dr. Lyle Micheli, Children's Hospital of Boston and past president of the American College of Sports Medicine

Coaches need to articulate to athletes four simple reasons for not using steroids: (1) there are potentially severe and health-damaging risks involved; (2) using steroids is cheating; (3) there will be negative consequences if an individual is caught using steroids; and (4) steroids are illegal. Knowing that steroid use is unacceptable and that there will be negative consequences of use are often the only reasons an individual needs to "save face" when the opportunity to use steroids presents itself. Whereas highly successful performers learn from their mistakes and put their errors behind them, most athletes feel extreme stress after performing poorly and below the expectations of the coach, parents, teammates, or even failing to meet their own expected level of performance.

Coaches must be mindful that, in spite of all that is known about the human body and exercise physiology, individuals respond differently to identical predesigned programs. Records of progress should be evaluated frequently. If the athlete feels that the program is ineffective in producing the desired results, the coach should assure the athlete that changes in the weight-training regime will be made in an attempt to produce the desired effects.

Adolescents often lack the skills in judgment that relate to their future. They see the avenues taken by others to attain success, a view that may blind them to the fact that drug use is risky business. Coaches can fill in the gaps between sacrificing everything for success and analyzing cost and benefits so that no inordinately high risks are involved. Coaches play a vital role in serving as role models for athletes at a time when the pressures to experiment with illegal drugs are the greatest. A coach's leadership skills should be used to create a drug-free environment. Coaches need to enforce the school's alcohol and other drug use policy as well as be aware of the signs and symptoms of alcohol and other drug use. Most importantly, coaches need to set an example by being drug-free themselves, including avoiding alcohol and tobacco products. Any other behavior by the coach would quickly be viewed as hypocritical by young athletes.

Coaches play a critical role in assuring that participation in sports is constructive rather than destructive, depending on whether the involvement leads to personal growth, well-being, and maturity of character or whether it leads to human problems and the diminishment of character and optimal health.

Strategies for Coaches/ Teachers:

- Take a clear stand against all illicit drug use, including steroid use.
- Establish team policies against the use of all drugs, including performance-enhancing aids.
- Keep and evaluate each athlete's individual progress. Make changes in the training regime if gains are not satisfactory.
- Understand steroid education objectives.
- Discuss dangers of steroid use and division alcohol and other drug use policy at team, parent, and staff meetings.
- Provide alternative strength-gaining and conditioning programs.
- Be careful not to convey a "win-at-all-costs" attitude.
- Be a drug-free role model.

"IF YOU'RE GOOD ENOUGH, YOU'RE BIG ENOUGH!"

...Woody Hayes, former football coach, Ohio State

See Chart #14, Strategies for Coaches/Teachers, in the **Transparency Masters** section.

The Role of School Counselors and Substance Abuse Professionals

School counselors have a significant role to play in the school's response to anabolic steroid use among students. The counselor or alcohol and other drug use prevention professional should be involved in prevention programs for steroid use and should provide direct counseling, assessment, and referral services.

Counselors can ensure that prevention efforts focus on the underlying ethical implications of steroid use, specifically "fair play" vs. "win at all costs." These psychosocial conflicts should be explored from personal and social dimensions, incorporating perspectives to the team, peers, coaching staff, and parents, all of whom play critical roles in the resolution of this dilemma.

The Role of Students

Students need to know all the facts about steroid use in order to make healthy individual choices and to be positive role models for others. It is important that they discuss steroid use with teammates, coaches, parents, and friends. Early decision-making will be helpful in avoiding having to make on-the-spot decisions. Students need to make up their minds ahead of time about what they hope to accomplish through sports, then choose to go the extra mile in athletics without the use of chemicals, including steroids. Students can achieve their goals through training; positive mental imaging and conditioning; the support of coaches, teammates and family; a healthy lifestyle; and personal dedication.

Strategies for School Couselors/Substance Abuse Professionals:

- Be knowledgeable of steroids and steroid use.
- Identify yourself as a consultant to parent groups, teams, administrators, coaches, and teachers.
- Help identify ways to increase school-based training and conditioning of athletes, using high school or local athletic trainers and steroid use monitoring and prevention.
- Consult with coaches and team captains to define ways to increase peer influence against all drug use, including steroids.
- Assist in educating coaches and health/PE teachers about the psychosocial effects of anabolic steroid use.

Strategies for Students:

- Be drug-free.
- Understand the dangers of steroid use. Talk to parents, coaches, and teachers.
- Learn healthy ways to gain strength.
- Exhibit good sportsmanship; keep competition in perspective.
- Encourage friends to be drug-free.

See Chart #15, Strategies for School Counselors and Substance Abuse Professionals, and Chart #16, Strategies for Students, in the **Transparency Masters** section.

Drug-Free Interscholastic Teams

Creating programs that are drug-free will be a challenge for every school. How well schools accept this challenge will determine the well-being of their student population. Striving to have drug-free teams should be a goal of every school and community.

It is important to identify the extent of the drug problem in a school or community by conducting a needs assessment. A survey of students, athletes, coaches, and parents can provide valuable information. This survey may address the number of students using alcohol and other drugs, including steroids; the substances that are being used; and the frequency of use. Schools may receive permission from Virginia Department of Education to use the Youth Risk Behavior Survey instrument for conducting a local needs assessment on students' health risk behaviors, including steroid use. It is important that results of this survey be shared with parents, coaches, and the community. The information that is gathered can also be used to develop a program that meets the needs of each school.

Virginia Department of Education contact person for Youth Risk Behavior Survey:

Fran Anthony Meyer
Associate Specialist
(804) 225-3210

It is recommended that team meetings for parents and athletes be held before each sports season. At these meetings the school's "no-use" alcohol and other drug use policy should be explained. The dangers of alcohol and other drugs, including steroids, should be discussed so that everyone will understand the level of commitment needed for the promotion of drug-free teams. Many schools are asking not only athletes but parents and coaches as well to remain drug-free as part of their overall commitment to a drug-free program.

Athletic team captains have a great responsibility in ensuring that their team is drug-free. Special training sessions should be provided to assist captains in handling their responsibilities. Intervention programs, including counseling, need to be in place for students who are identified as violating school policies.

The Training Environment

Those involved in the training of athletes should encourage athletes to train hard to become maximally fit. Schools are encouraged to have their own weight rooms and training facilities staffed by trained educators to help students achieve these gains. Many students discover steroids and receive misinformation about these drugs from people they come in

contact with outside of school.[25] By having adequate facilities available for students on school property, proper training can be encouraged. Students exhibiting any signs of steroid use may be identified and receive counseling and other intervention services according to school policy and procedure.

Students should also be taught that athletic prowess involves a combination of skill, mental acuity, diet, rest, mental and physical health, and genes. A healthy training diet consisting of complex carbohydrates gained from eating pasta, vegetables, and fruit, together with a proper weight-training program, should be offered as healthy alternatives to taking steroids for gaining physical strength.

THE ROLE OF PARENTS IN THE PREVENTION OF STEROID USE

From the earliest years, parents have a primary role in promoting healthy attitudes and lifestyles in their children and in helping them understand the appropriate role of sports in their lives. Through positive role modeling, parents can promote enjoyment and personal growth in athletics through fair competition rather than the goal of "winning at all costs." Parents can help children build their self-images, based on their intrinsic worth and unique characteristics, if parents avoid an overemphasis on physical attributes and athletic performance.

"Do as I say, not as I do" doesn't work with young people today. Children imitate their parents' behaviors. Therefore, parents need to be drug-free themselves, including avoiding caffeine, alcohol, and tobacco.

The following suggested prevention strategies for parents can be used as discussion topics for preseason meetings and for other parent education programs on steroid education and the role of parents in drug use prevention. Local school divisions may also wish to use the *PACT* program (*Parents and Children Together*) available from the Virginia Department of Education. This program is a six-session parent education curriculum for the prevention of youth health-risk behaviors, such as the use of alcohol and other drugs, including steroids. The Department offers a manual and a training-of-trainers for individuals who then train parents to become facilitators of the sessions for other parents.

Virginia Department of Education contact person for PACT program:

Marsha Hubbard
Associate Specialist
(804) 225-2928

Strategies for Parents

- Help children keep sports in perspective and maintain a balance of activities.
- Encourage children to rely on their own talent, training, confidence, and determination to produce the performance level for which they are capable.
- Be aware of the messages you are sending. Stress realistic expectations and focus on the fun of participation rather than on winning. Especially when children are young, sports should stress learning the fundamentals of a sport with an emphasis on the "fun."
- Foster your children's self-esteem based on their intrinsic qualities rather than on appearance and athletic performance.
- Help your children understand that there are no easy, quick answers or shortcuts to reaching their goals. Teach

See Chart #17, Strategies for Parents, in the **Transparency Masters** section.

them to set short- and long-term goals and to celebrate small successes and improvements. Children need to know that these efforts take time and personal commitment.

- Be a healthy role model yourself for a drug-free lifestyle (including avoiding caffeine, alcohol, and tobacco).
- Help children accept their physical attributes and value their unique characteristics.
- Help children balance the desire to excel with a longer view of health and risk reduction.
- Encourage children to explore other opportunities for participation, expression, and accomplishment that are as important as athletics.
- Reinforce the message that the goal of activity programs should be for all-around education and development, not to "create stars."
- Provide a secure and caring environment where children can grow, experiment, explore, take risks, and assume responsibility.
- Encourage children to learn nutritional factors, exercises, and strength-building strategies that will increase strength, improve appearance, and improve performance.
- Learn the facts about anabolic steroids. Share your concerns with your children. Encourage them to ask questions.
- Teach your children to value health as a priority over appearance, money, and popularity. Model this value in your daily life.
- Help your children understand that any health decision must consider long-range, as well as short-term consequences.
- Teach your children decision-making skills, refusal skills, and guidelines for making healthy choices. Provide opportunities for them to make their own decisions and to accept the consequences of their decisions.

OTHER ERGOGENIC AIDS

Drugs that are commonly used and abused by athletes fall into two categories: 1) **recreational drugs**, such as alcohol, cocaine and its derivatives, marijuana, heroin, nicotine (cigarettes), and 2) **ergogenic aids**, or performance-enhancers, including stimulants (e.g., amphetamines, caffeine, decongestants), beta-blockers, amino acids, glandular extracts, growth hormones, and anabolic steroids.

Anabolic steroids are just one type of the many **ergogenic** (performance-enhancing) **aids** used by athletes. Some of these aids are legal, over-the-counter substances available at many health/fitness stores. Others are drugs that can be prescribed legally for certain medical conditions. Used as performance enhancers, however, these drugs are illegal.

Currently science knows very little about the long-term effects of anabolic steroids or other ergogenic aids. Research is only beginning; however, the dangers are already becoming clear. Even in the absence of specific scientific information about physical side effects, some ergogenic aids are adversely affecting the wallets of young athletes who spend $30 to $100 per month on something they think will "bulk them up." It seems, then, that producers of these vitamin/protein supplements, amino acids, animal extracts, and high-caloric powders are merely selling a dream in a bottle. But, what if that dream becomes a nightmare?

The following information, along with information on steroids, should be provided to young athletes and parents to make them aware of just what young athletes may be taking.

Amphetamines

Amphetamines, commonly called "pep pills" or "speed," have some of the same properties as adrenalin, the body's natural stimulant. Amphetamines affect the central nervous system and the sympathetic nervous system, increasing breathing and heart rate, raising blood pressure, decreasing appetite, dulling pain, and heightening feelings of assertiveness.

Amphetamines were the drug of choice for athletes in the 1960s and 70s. Today's athletes favor anabolic steroids over amphetamines. There is still, however, some

Terms:

- **Recreational drugs**: drugs used to "get high" or to "have fun", such as alcohol, marijuana, and cocaine.
- **Ergogenic aids**: performance enhancers such as amphetamines, beta-blockers, amino acids, glandular extracts, growth hormones, and anabolic steroids.
- **Amphetamines**: stimulant drugs having some of the same properties as adrenalin, the body's natural stimulant. Amphetamines, also called "pep pills" or "speed," increase breathing, heart rate, blood pressure, and feelings of assertiveness and decrease appetite and pain.

See Chart #18, Ergogenic Aids, in the **Transparency Masters** section.

amphetamine use. In fact, amphetamines and erythropoietin are considered by some to be the two most dangerous substances currently used by athletes.[26] Most amphetamine users take larger and larger doses to experience greater "highs." The side effects are severe weight loss and personality distortion, similar to the mood swings caused by steroid use. Ironically, some athletes think steroids are less harmful than amphetamines, but both drugs are equally harmful.[27]

Caffeine

Caffeine is one of the bitter, crystalline alkaloids found in coffee, some teas, cola drinks, and chocolate. Caffeine acts as a central nervous system stimulant and a mild diuretic. Some young athletes have been known to chew coffee grounds before athletic contests, thinking the caffeine will "pump them up" as stimulants do. Caffeine is also used by endurance athletes to stimulate the use of certain energy stores.

Cocaine

Cocaine is used by athletes more as a recreational drug to "get high" or "have fun" than as a performance-enhancing agent. Cocaine is the drug that killed basketball star Len Bias in June 1986 after he and his friends used the drug to celebrate his selection as the first player in the NBA draft for that year.

Cocaine, an odorless powder extracted from the leaves of the coca plant, is a stimulant closely akin chemically to amphetamines. It increases body temperature, heart rate, blood pressure and decreases appetite. One of the greatest effects of cocaine is psychological dependence. Users do not become physically addicted to the drug or suffer physical withdrawal symptoms when they stop using it; however, they do become dependent on it emotionally. Since it is a stimulant, cocaine could enhance short-term athletic performance, but it is not used so much as a performance enhancer but as a recreational drug. Cocaine is easily detected in urine tests.

Terms:

- **Caffeine**: a bitter, crystalline alkaloid found in coffee, some teas, cola drinks, and chocolate, which acts as a stimulant and mild diuretic.
- **Cocaine**: an odorless powder extracted from the leaves of the cocoa plant, which increases body temperature, heart rate, blood pressure and decreases appetite.

See Chart #19, Ergogenic Aids, in the **Transparency Masters** section.

Beta-blockers

Beta-blockers are drugs used to decrease heart rate and, as a result, to decrease blood pressure. A side effect of some of these medications is that they block or decrease the body's stimulatory responses. Therefore, these ergogenic aids are used by marksmen, golfers, archers, pistol shooters, trapshooters, ski jumpers, and divers to achieve steadiness of the hands, to calm nerves, and to encourage sleep before competition. Beta-blockers would be a great hindrance to any athlete in a physically demanding sport. The drugs blunt the heart's ability to increase its rate as exercise is increased and, thus, cause great fatigue. In addition to interfering with the action of the body's adrenalin, beta-blockers retard the production of a liver enzyme needed for eliminating body wastes.[28]

Alcohol

Alcohol is the drug most commonly used and abused by athletes. It is used as a recreational drug more than as an ergogenic aid.

Alcohol is actually a depressant drug that acts on the central nervous system and the brain, creating a mild tranquilizing effect on the user. Alcohol is the drug most commonly used by athletes because it is legal, readily available, and socially acceptable. Athletes have been known to drink before competition to relieve tension and after a competition to celebrate or "let off steam."

Alcohol can impair a person's physical and emotional health. Specifically, the drug impairs reaction time, coordination, reason, judgment, speech, vision, hearing, respiration and causes drowsiness. The dangerous effects of alcohol on athletes as well as nonathletes is becoming more and more apparent as alcohol is continually responsible for more and more tragic accidents. News headlines of the deaths of two Cleveland Indians baseball players, Tim Crews and Steve Olin, in an alcohol-related boating accident in March 1993 were a painful reminder that alcohol does impair one's vision and judgment.

In combination with other drug-taking, alcohol can kill. Athletes, amateur and professional, and entertainers have made headlines as a result of their use of alcohol and other drugs. In some cases, such use proved fatal. Unfortunately, some professional athletes have been suspended from

Terms:

- **Beta-blockers:** drugs used to decrease heart rate and, as a result, to decrease blood pressure. A side effect of their use is that they block or decrease the body's stimulatory responses, producing steady nerves and hands.
- **Alcohol**: a widely used sedative hypnotic drug obtained by fermentation of carbohydrates by yeast; also called grain alcohol.

playing only for short periods of time, then reinstated. Such slap-of-the-hand punishments provide poor role models for young athletes and often send mixed messages concerning alcohol and other drug use. Schools must combat this negative publicity with consistent "no-use" messages for all drug use, including alcohol, tobacco, steroids, and other ergogenics.

Sodium Bicarbonate

Sodium bicarbonate is a white, odorless powder with a saline taste sold in pill form in pharmacies and health/nutrition/fitness stores. It is used chiefly as an antacid. Some athletes involved in high-power or anaerobic exercise use sodium phosphate to try to reduce fatigue. As the body exercises, lactic acid is produced. As this lactic acid builds up, fatigue sets in until the normal body processes utilize and/or neutralize the increased lactates. Sodium bicarbonate acts as a buffer that helps prevent the blood acidity from lowering due to the lactic acid, thus lessening fatigue.

The use of sodium bicarbonate is most significant in an event such as an 800-meter race involving high-power exercise. The side effects of using excessive sodium bicarbonate are primarily severe gastric distress.

Phosphate loading

Phosphate loading is similar to the use of sodium bicarbonates. Athletes sometimes "load up" on sodium acid phosphate, a water-soluble compound used in making baking powder and pharmaceuticals, and potassium phosphate. This practice purports to improve performance by reducing recovery time from fatigue, thus enhancing endurance. There is, however, little significant effect on the body.

Erythropoietin

Erythropoietin is a naturally occurring substance secreted by the kidneys to induce the bone marrow to produce more red blood cells. The drug erythropoietin (EPO) is produced synthetically and prescribed by physicians to treat certain blood disorders, such as anemia associated with chronic

Terms:

- **Sodium bicarbonate**: a white, odorless powder sold in pill form to offset the fatiguing effect of the body's production of lactic acid during exercise.
- **Phosphate loading**: the use of additional amounts of sodium acid phosphate and potassium phosphate to improve performance by reducing fatigue and enhancing endurance.
- **Erythropoietin**: a naturally occurring substance secreted by the kidneys to induce the bone marrow to produce more red blood cells. This substance is also produced synthetically and used by athletes in physically demanding sports.

kidney failure. The increased production of oxygen-carrying red blood cells increases the aerobic capacity of an individual, making the drug a powerful performance aid for physically demanding sports, such as marathons, cross-country ski races, and long-distance bike races.

Because erythropoietin is a naturally occurring substance in the body, detection of its synthetic drug form in the body is impossible by current testing methods. This fact makes the drug extremely attractive to athletes. The long-term side effects of erythropoietin, however, are devastating -- stroke, heart attack, and abnormal kidney function, all of which can be fatal. Some experts feel that erythropoietin is one of the most dangerous substances an individual can use.

Some specialists like Dr. Robert Voy, medical director of the Las Vegas Institute of Physical Therapy and Sports Medicine, say "EPO will be a more dangerous drug than anything we've seen. It has the potential to kill athletes."[29] The danger of erythropoieten is that the increase of red blood cells thickens the blood, increasing the chance of developing clots that could lead to stroke or heart attack. In addition, an athlete who during an event sweats profusely will make the blood more viscous by losing more fluid.

Blood Doping

Blood doping is a process whereby at least one unit of blood is removed from the body and subsequently reinfused after a period of intense training just prior to athletic competition.

Like the drug erythropoieten, this process produces an increased number of red blood cells, the oxygen-carriers of the body. An individual using the blood doping procedure would thus have a distinct advantage in aerobic capacity for an athletic event. Blood doping has been done prior to such running events as the 5,000 and 10,000 meters.

The side effects of blood doping include an increased likelihood for sludging in small blood vessels due to the increased viscosity of the blood. Such sludging could produce a stroke or heart attack or adversely affect kidney function.

Terms:

- **Blood doping**: the process of removing at least one unit of blood from the body and reinfusing it just prior to athletic competition to increase the number of oxygen-carrying red cells in the body, thus increasing aerobic capacity.
- **Amino acids**: any of a class of organic compounds which are the building blocks from which proteins are constructed.

Amino Acids

Amino acids are the building blocks of which all proteins are constructed and the end-products of protein digestion. There are 20 different amino acids. All are necessary for metabolism or growth. Some are supplied by food and are termed "essential." Others can be produced by the body. Amino acids can also be produced synthetically and are available in pill or powder form from health/nutrition/fitness stores.

It is a common belief among weightlifters that if they want to increase muscle mass, they must, therefore, increase their intake of amino acids (protein) to accommodate this increased demand. The daily requirements for protein range from 0.8 mg/kg per day for sedentary adults to 1.5 - 2.0 mg/kg per day for active athletes and growing adolescents. The current American diet far exceeds this amount of daily protein intake. Therefore, increased amounts of amino acids are unnecessary as long as the dietary intake includes complete proteins which provide the necessary essential amino acids.

Excess protein can lead to **ketosis** (the accumulation of excessive ketone bodies in the blood and urine), dehydration, the tendency for gout, and an increase in the urinary excretion of calcium. Excess protein can also end up being stored as fat.

Glandular Extracts

Glandular extracts are available over-the-counter from health/nutrition/fitness stores. These substances produced in either liquid or pill form are purported to increase energy utilization and muscle mass. They contain extracts from various animal organs such as the thymus, pancreas, kidney, prostate, hypothalamus, testicles, and spleen. There is absolutely no nutritional value obtained from these glandular extracts, and they fall far short of any claims made by their producers.

Common side effects of glandular extracts include nausea and vomiting. Also, these substances are relatively expensive, costing $30-$60 a month if used according to the manufacturers' recommendations.

Terms:

- **Glandular extracts**: substances produced in pill or liquid form containing extracts from various animal organs purported to increase energy utilization and muscle mass.

Diuretics

Diuretics are readily available over-the-counter at any pharmacy. They are used in sports in which competitors are grouped in weight classes (e.g., boxing, bodybuilding, weightlifting, and wrestling). Diuretics reduce weight quickly by hastening the excretion of urine. They are also used by those wishing to mask the presence of other drugs in their bodies by hastening the excretion of urine. Diuretics can cause leg and stomach cramps, excessive loss of sodium and potassium, and, ultimately, kidney damage. The International Olympic Committee has placed diuretics on its list of banned drugs.

Human Growth Hormone

Synthetic **human growth hormone** (hGH) is an equivalent of the substance produced naturally by the pituitary gland to promote the natural growth of the human body. It produces a positive nitrogen balance that increases the utilization of protein into muscle.

Synthetic human growth hormone is an injectable drug used legally for certain medical conditions. As an ergogenic aid, however, its use is illegal but growing in popularity as a replacement for anabolic steroids. The synthetic hormone is not detectable by current testing methods since the hormone is a naturally occurring substance in the body. This fact makes it an even more attractive ergogenic aid to athletes.

Some athletes, parents, and coaches are being tempted to use the synthetic growth hormone to increase height, thereby increasing a child's chance for athletic prowess and fortune.[30]

The long-term side effects of the use of synthetic human growth hormone are irreversible and may even be life-threatening. These side effects include an increase in the laxity of muscles, a decrease in the protective fat surrounding the abdominal organs, and the disease acromegaly. **Acromegaly** is a disease caused by an overgrowth of bone in the feet, hands, nose, and jaw. Facial tissue also expands over the bone growth, creating a "Frankenstein" look. Other long-term side effects are diabetes, heart disease, and impotence. Premature death also occurs in nearly all acromegaly cases.[31]

Terms:

- **Diuretics**: substances which reduce weight quickly by hastening the excretion of urine.
- **Human growth hormone**: a hormone produced by the pituitary gland to invoke maturation and physical development. The hormone can be replicated synthetically through genetic engineering. It is used by some athletes to increase height and muscle mass.
- **Acromegaly**: a disease caused by the use of synthetic growth hormone, resulting in an overgrowth of bone in the feet, hands, nose, and jaw. Facial tissue expands over the bone growth, creating a "Frankenstein look."

Vitamin/Protein Supplements

Some athletes have the notion that the more vitamin/protein supplements they take, the better. **Vitamin/protein supplements** are substances produced synthetically to resemble organic substances found in minute amounts in natural foodstuffs. Such nutritional supplements are readily and legally available at health/nutrition/fitness stores. The idea that taking multiples doses of vitamins/proteins increases fitness is mistaken, however. Vitamins are essential in small quantities to normal metabolism. A proper diet and perhaps one multi-vitamin supplement are adequate. Excessive amounts of vitamins/proteins used by some athletes have not been proven to enhance performance but are expensive and often worthless.

Like steroids, these various other ergogenic aids are a short-cut to athletic prowess and success. In reality, there are no short-cuts, however. Parents, teachers, and coaches must send the consistent message that the use of any performace-enhancing aid is ethically wrong and potentially physically harmful. Research is so new and limited that there is not definite proof of the long-term consequences of all performance-enhancing drugs. The risks that are still unknown may constitute even greater risks.

Together schools and communities must convey a "hands-off" approach to steroids and all other ergogenic aids. Sports must be kept in their proper perspective. Athletic prowess is developed through hard work and physical training; it does not come magically from a pill or a liquid. The focus of sports for high school athletes should not be solely on the winning but on the building of character, camaraderie, and sportsmanship. Parents, teachers, and coaches must set this example for young athletes to follow.

Terms:

- **Vitamin/protein supplements:** substances produced synthetically to resemble organic substances found in minute amounts in natural foodstuffs.

APPENDICES

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STEROIDS: A FACT SHEET

Anabolic steroids are a group of powerful natural or synthetic compounds closely related chemically to the natural hormones of the male (testosterone). Originally, these steroids were designed for: 1) men who had a deficiency in testosterone, 2) malnutrition, 3) skeletal disorders and growth deficiencies, 4) soft-tissue injuries, 5) certain types of anemia, and 6) to offset the negative effects of radiation treatment. Since 1950, anabolic steroids have been used by athletes to increase muscle size and strength. However, the increasing availability of steroids coupled with the increasing need to have the ideal male or female body have made steroids a popular drug among the general school population. Unfortunately, those who tend to view the effects of steroids as positive tend to lose sight of the severe harmful effects of this "rambo drug."

Anabolic steroids can produce a host of side effects and adverse reactions. Although the majority of these side effects in males reverse themselves when steroid use is discontinued, some side effects in females appear to be irreversible. Some established side effects or adverse reactions from anabolic steroids include:

- acne
- clitoris enlargement (irreversible)
- HDL (which helps reduce cholesterol) decrease
- jaundice
- liver tumors
- prostate enlargement
- stunted growth
- cancer
- death
- hirsutism (hairness in women--irreversible)
- liver disease
- male pattern baldness (in women--irreversible)
- swelling of feet or lower legs
- cholesterol increase
- edema (water retention)
- increased risk of coronary artery disease (heart attack, stroke)
- shrinking testicles (males)
- oily skin (females only)
- sterility (reversible)
- yellowing of eyes or skin

Other possible side effects and adverse reactions include:

- abdominal or stomach pains
- aggressive, combative behavior ("roid rage")
- increased chance of injury to muscles, tendons and ligaments
- longer recovery period from injuries
- diarrhea
- fever
- hives
- sore tongue
- unpleasant breath odor
- anaphylactic shock
- bone pain
- insomnia
- chills
- listlessness
- dark-colored urine
- muscle cramps
- fatigue
- headache
- urination problems
- unexplained weight loss
- unusual bleeding
- vomiting blood
- breast development (sore/swelling--male)
- kidney disease
- menstrual irregularities
- depression
- nausea or vomiting
- feeling of discomfort
- high blood pressure
- rash
- unnatural hair growth
- unusual weight gain

The list of adverse reactions resulting from steroid use is long; however, it does not take into account the number of adverse reactions that might result when steroids are taken with other drugs, such as those used to counteract unwanted steroid side effects.

There is little doubt that steroids can affect human behavior. Withdrawal from steroids can develop problems that may make an abuser want to go back to the drugs or take other drugs (i.e., depression can result from withdrawal, prompting some former abusers to take amphetamines for a lift). In addition, muscle bulk and weight gain associated with steroid use will disappear quickly when the drug is discontinued, causing users to return to the steroid in order to maintain the desired "look."

Educating youth about the dangers of steroid use is important. However, one difficulty in teaching young people is that many of the bad effects of steroids might not appear for a decade or two after the user begins taking the drugs. Cardiovascular problems and liver tumors ten years in the future aren't going to get much consideration from middle or high school students. However, young people need to know that there are several adverse reactions to steroids that will have an impact on their present lives and that some, such as acne and uncontrollable "roid rages," might cause immediate difficulties.

Many of these adverse effects resulting from the use of steroids depend on the amount of steroid used and the length of time of its use. In addition, there is no known method for predicting which individuals are more likely to develop these adverse effects.

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GLOSSARY

Acromegaly - a disease caused by the elongation and enlargement of bone in the feet, hands, nose, and especially the jaw. Acromegaly is accompanied by enlargement of the nose and lips and thickening of soft tissues of the face. This disease can be caused by the use of synthetic human growth hormone to increase height.

Alcohol - the drug most commonly used by student athletes. It has no ergogenic benefit (does not improve performance), but it is used as a recreational drug.

Amino acids - any of a class of organic compounds which are the building blocks from which proteins are constructed.

Amphetamines - a class of stimulant drugs sometimes used by athletes to mask fatigue. Amphetamines affect the nervous system, increasing breathing and heart rate, raising blood pressure, decreasing appetite, dulling pain, and heightening feelings of assertiveness. Amphetamines are one of the two most dangerous substances currently used by athletes.

Anabolic-androgenic steroids (AAS) - chemical derivatives of the male sex hormone testosterone. **"Anabolic"** means that these drugs help build muscles or other tissues in the body. **"Androgenic"** refers to the ability of these drugs to help the body develop male sex characteristics. Although many of these drugs have a relatively high anabolic-androgenic ratio, it is impossible to completely separate these two characteristics. Some athletes use steroids in pill and injectable form to increase muscle mass, power, and speed. These drugs are potentially dangerous to the user.

Atherosclerosis - a chronic disease in which thickening and hardening of arterial walls interferes with blood circulation.

Atrophy - the degeneration (wasting away) of a cell or organ of the body as in the atrophy of the male testicles from steroid use.

Beta-blockers - drugs used to decrease heart rate and, as a result, to decrease blood pressure. A side effect of some of these medications is that they block or decrease the body's stimulatory responses, making them attractive to athletes requiring steady hands and nerves (e.g., marksmen, archers, golfers, etc.).

Black market - the illegal buying and selling of goods, such as illegal drugs, including steroids.

Blending - mixing different drugs.

Blood doping - (boosting, packing) a process whereby at least one unit of blood is removed from the body and subsequently reinfused after a period of intense training just prior to athletic competition. Such a process produces an increased number of red blood cells, thereby increasing oxygen delivery to skeletal muscles, improving oxygen uptake and endurance capacity, giving an athlete a distinct advantage for aerobic activity such as in 5,000 and 10,000 meter races.

Bulking up - a slang expression for increasing muscle mass through steroid use.

Caffeine - a drug found in coffee, tea, cola drinks, and chocolate which acts as a central nervous system stimulant and a mild diuretic. It is used by athletes to improve the efficiency of fuel use (its metabolic properties affect the enzyme which breaks down body fat quicker) and to reduce fatigue (it increases the heart rate). Its use is banned by several athletic organizations (e.g., NCAA, IOC).

Cardiovascular disease - disease affecting the heart and blood vessels.

Catabolic state - a condition of the body when it is not growing but deteriorating. This condition is brought about by intense training that causes the release of glucocorticosteroid and a substantial increase in nitrogen utilization. This condition may explain why some people experience a plateau in their training.

Cocaine - a white, crystalline alkaloid which acts as a stimulant, increasing heart rate as well as raising blood pressure and body temperature. It is an illegal drug and has very dangerous effects. In high doses, it can cause paranoid thought and tachycardia.

Controlled substances - drugs which have been placed on a schedule or in special categories to prevent, curtail, or limit their distribution and manufacture. Under the Controlled Substance Act of 1970, the Attorney General of the United States has the authority to place drugs into five schedules or categories based on their relative potential for abuse, scientific evidence of the drug's pharmacological effect, the state of current scientific knowledge about the drug, and its history and current pattern of abuse.

Corticosteroids - a family of potent, versatile hormones originating mainly in the adrenal glands. These drugs are used therapeutically to treat inflammatory and allergic diseases. A corticosteroid can be produced naturally in the adrenal glands or synthesized in the laboratory.

Cycle - the practice of taking multiple doses of steroids for 6 to 12 weeks ("cycling on"), then staying off them ("cycling off") for an equal amount of time before beginning another "on" cycle.

Doping - using drugs and other nonfood substances to improve athletic performance and prowess.

Drug holiday - a period of four to seven weeks during which an individual involved in taking steroids is drug-free. During this time size and weight often decrease.

Edema - an abnormal accumulation of fluid, or water retention, in intercellular spaces of the body.

Endometriosis - inflammation of the membranes lining the uterus.

Epiphyses - growth plates of the long bones. When steroids are used, these plates tend to close prematurely in adolescents, causing permanent growth stoppage (short stature).

Ergogenic aids - substances used to boost performance. In terms of sports, drugs can be divided into two categories: ergogenic (performance-enhancing) drugs and practices (stimulants, anabolic steroids, nutritional supplements, and blood doping) and performance-continuing drugs (narcotic analgesics and substances such as dimethylsulfoxide, DMSO).

Erythropoietin (EPO) - a naturally occurring substance secreted by the kidneys that induces the bone marrow to produce more red blood cells. The drug EPO is synthetically produced and prescribed by physicians to treat certain blood disorders, such as anemia associated with chronic kidney failure. The increase of oxygen-carrying red blood cells increases the aerobic capacity of an individual. Some athletes, therefore, use the drug illegally as a performance aid for marathons, bike races, etc. It is one of the two most dangerous substances currently used by athletes.

Euphoria - a feeling of well-being or elevation of mood marked by confidence and assurance. Stimulant drugs can cause a feeling of euphoria.

Glandular extracts - substances produced in either liquid or pill form from extracts of various animal organs. These substances available over the counter in health/nutrition/fitness stores are purported to increase energy utilization and muscle mass.

Gynecomastia - the development of female breast tissue in the male pectorals, a side effect of steroid use.

Hereditary angioedema - periodic swelling of some parts of the body caused by a type of allergic reaction to some insect bites, foods, viruses, etc.

Hormone - an endocrine secretion carried by the blood to induce a specific physiologic effect.

Human growth hormone (hGH) - a hormone produced naturally by the pituitary gland to invoke maturation and physical development. The hormone produces a positive nitrogen balance or, in other words, increases the utilization of protein into muscle, thus promoting the natural growth of the human body. Some athletes are, therefore, tempted to use hGH, which is extracted from the pituitary glands of cadavers, to increase height and body mass and, thereby, increase the chances of athletic prowess. Today growth hormone can be synthetically created through a DNA replication process, resulting in the creation of synthetic growth hormone.

Hypertension - elevation of the blood pressure.

Hypertrophy - abnormal enlargement of a muscle or muscle group.

Impotence - inability to have sexual intercourse.

Ingested - taken in by mouth and swallowed; steroids in pill form are ingested.

Injectable - introduced into body tissue or a blood vessel by way of a needle; one of the methods of taking steroids.

Lean body weight - the weight of an individual excluding fatty tissue.

Libido - the emotional desire to have sex.

Masking - various methods used to avoid the detection of ergogenic aids.

Megadoses - massive amounts of steroids taken by injection or orally in pill form.

Metabolized - physically and chemically processed by the body.

Osteoporosis - a condition especially affecting elderly women resulting from a decline in bone mineral content, making bones susceptible to fracture.

Phosphate loading - the practice by athletes of increasing sodium acid phosphate, a water-soluble compound used in making baking powder and pharmaceuticals, and potassium phosphate. This practice purports to improve an athlete's performance by reducing recovery time from fatigue, thus enhancing endurance. There is, however, little significant effect on the body. This practice is similar to using sodium bicarbonate.

Plateauing - the leveling off of the effect of a steroid or steroids. At a certain level or plateau, the drug becomes ineffective.

Pyramiding - the practice of beginning with a low dosage of one steroid, increasing the dosage, and adding other steroids.

Risk - any chance that might result in an increased likelihood of harm.

Risk behavior - any behavior that increases the chance (risk) of harm. For example, injecting anabolic steroids is a "risk behavior" for contracting HIV/AIDS (if needles are shared).

"Roid rage" - feelings of irritability, unexplained aggressiveness, outbursts of anger, and overreaction to incidents as a result of steroid use.

Shotgunning - taking steroids on a hit-or-miss basis.

Sludging - an abnormal condition of the blood when there is an increase of red blood cells due to blood doping or the use of erythropoieten In this condition the cells tend to clump together and move slowly through the vessels, sometimes clogging the smaller vessels and causing stroke or heart attack.

Sodium bicarbonate - a white water-soluble powder used chiefly as an antacid. Athletes involved in high-power or anaerobic exercise use this substance to reduce fatigue. Sodium bicarbonate is a buffer that helps prevent the blood acidity from lowering due to the lactic acid produced during exercise. Lactic acid causes fatigue until normal body processes utilize and/or neutralize the increased lactates.

Stacking - using a combination of anabolic steroids, often in combination with other drugs.

Staggering - avoiding the plateauing of stacked drugs by stopping one drug, then going on to another.

Sterility - inability to reproduce sexually.

Sympathomimetic amines - any of a class of compounds derived from ammonia by replacement of one or more hydrogen atoms with organic groups to mimic stimulation of the sympathetic nervous system (regulating involuntary reactions to stress, stimulating heartbeat, breathing rate, sweating, etc.). Decongestants are types of these substances.

Tapering - gradually reducing steroid use over a period of four to six weeks.

Testosterone - the male sex hormone responsible for strength, muscle mass, and secondary sexual characteristics, such as body hair, deepened voice, and facial hair.

Toxic - harmful, destructive. Steroids are toxic to the liver, especially if taken orally or ingested.

Urethritis - inflammation of the urethra, the passage through which urine is discharged from the bladder.

Viscosity - the state of being sticky or gummy. Resistance offered by a fluid to a change of form or relative position of its particles due to attraction of molecules to each other. The viscosity of blood is increased due to the increased production of red blood cells as a result of the practice of blood doping or the use of the drug erythropoieten.

Vitamin/protein supplements - substances produced synthetically to resemble organic substances found in minute amounts in natural foodstuffs. Vitamins are essential in small quantities to normal metabolism; however, a proper diet and, perhaps, one multi-vitamin are adequate. Excessive vitamin/protein supplements used by some athletes are expensive and often worthless.

Works - the needles, syringes, and other paraphernalia used to inject illicit drugs such as steroids.

RESOURCES

American College of Sports Medicine
Box 1440
Indianapolis, Indiana 46206
(317) 637-9200

The American Orthopaedic Society for Sports Medicine
70 West Hubbard Street, Suite 202
Chicago, Illinois 60610
(312) 644-2623

Minnesota Prevention Resource Center
2829 Verndale Avenue
Anoha, Minnesota 55303
(612) 427-5310

National Clearinghouse for Alcohol & Drug Info. (NCADI)
P. O. Box 2345
Rockville, Maryland 20847-2345
(800) 729-6686

National High School Athletic Coaches Association
Box 1806
Orlando, Florida 32678
(407) 628-8555

National Federation of State High School Associations
TARGET
11724 Northwest Plaza Circle
P. O. Box 20626
Kansas City, Missouri 64195-0626
(800) 366-6667

U. S. Department of Health and Human Services
5600 Fishers Lane
Rockville, Maryland 20857
(301) 295-8013

W. B. Ruster Foundation
1613 Chicago Road
Sturgis, Michigan 49091
(616) 651-3926

The American Medical Society for Sports Medicine
7611 Elmood Avenue, Suite 203
Middleton, Wisconsin 53562
(608) 831-4484
(608) 8310-5122 (FAX)

Beyond Athletics
414 Aspen Court
Meford, New Jersey 08055
(609) 654-4050

National Athletic Trainers Association
2952 Stemmons Street, Suite 200
Dallas, Texas 75247
(800) TRY-NATA

National Collegiate Athletic Association (NCAA)
Box 1906
Mission, Kansas 66201
(913) 384-3220

National Institute on Drug Abuse (NIDA)
Division of Prevention and Communications
Prevention Branch
U. S. Department of Health and Human Services
Parklawn Building, Room 20-A-54
5600 Fishers LaneRockville, Maryland 20857
(301) 433-2450
(800) 622-HELP

National Media Outreach Center
4802 Fifth Avenue
Pittsburgh, PA 15213-2956
(412) 622-1491

United State Olympic Committee
Department of Educational Services
1750 East Boulder Street
Colorado Springs, Colorado 80505-5760
(719) 632-5551

SUGGESTED READINGS

Amateur Athletic Foundation of Los Angeles. *Sports Devastated: Steroids Are Destroying Our Athletes*. (213) 730-9600, FREE.

American College of Sports Medicine. *American College of Sports Medicine Position Stand on Use of Anabolic Steroids in Sports* and *Anabolic Steroids and Athletes*. Send $1 each pamphlet and a stamped, self-addressed envelope to ACSM, Dept. P, P. O. Box 1440, Indianapolis, Indiana 46206-1440.

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Chaikin, Tommy with Rick Telander. "The Nightmare of Steroids." *Sports Illustrated*, October 24, 1988, pp. 83-102.

Courson, Steve and Lee R. Schreiber. *False Glory: The Steve Courson Story*. Longmeadow Press, Stamford, Connecticut, 1990.

Goldman, Bob and Ronald Katz. *Death in the Locker Room II*. Elite Sports Medicine Publishers, (800) 677-5151.

Griffin, Tom and Roger Svendsen. *What to Say, What to Do: When Someone's Alcohol or Other Drug Use Concerns You*. Health Promotion Resources, 1990.

How Drugs Affect Sports Performance. Committees of Correspondence, Drug Prevention Resources, 57 Conant Street, Room 113, Dunvers, MA 01923. $15 per 100 prepaid or purchase order.

James, Michael. "Steroids: Bulk Up, Up." *High School Sports*, February, 1989.

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National Collegiate Athletic Association. *Drugs and the Athlete...a losing combination*. Available from TARGET Order Dept. (800) 366-6667. $1.00 per copy, plus $3.50 shipping and handling.

National Media Outreach Center. *The Chemical People Newsletter*. September/October 1992.

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San Diego County Office of Education. *Understanding Anabolic Steroids, A Teaching Unit for Secondary Schools, Grades 7-12*. 6401 Linda Vista Road, Graphics, Room 212, San Diego, Califronia 92111-7399 . $18.00 each.

Telander, Rick and M. Noden. "The Death of an Athlete." *Sports Illustrated*. February 20, 1989, pp. 68-78.

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United States Department of Health & Human Services, Office of Inspector General, Office of Evaluation and Inspections. *Adolescents and Steroids: A User Perspective*. August, 1990. (202) 619-1142. FREE.

Virginia Department of Education. *A Framework for Prevention: A Guide for Developing a Comprehensive School Policy Concerning Alcohol and Other Drugs*. Richmond, Virginia, 1993.

____. *I Am Always Special: Alcohol and Other Drug Use Prevention Curriculum*. Richmond, Virginia, 1990, 1991.

____. *PACT: Parents and Children Together*. Richmond, Virginia, 1992.

____. *1992 Youth Risk Behavior Survey Report*. Richmond, Virginia, December 1992.

Voy, Robert O., M.D. *Drugs, Sports, and Politics*. Princeton, New Jersey, West Dakota Corporation.

W. B. Ruster Foundation. *Steroids: To Use or Not to Use--A Guide for Students*. Sturgis, Michigan. (616) 651-3926. ($30 per 100 copies; quantity discounts, plus shipping and handling).

Wright, James E. and Virginia Cowart. *Anabolic Steroids: Altered States*. Benchmark Press, Carmel, Indiana, 1990.

Yesalis, C.E., et al. "Incidence of Non-Medical Use of Anabolic Steroids." *NIDA Research Monograph 102*, 1990.

SUGGESTED AUDIOVISUALS

Anabolic Steroids: The Real Story. David Sinnott. Reviewed by education administrators and government agency officials as the top steroid intervention video on the market today. Available from Kathryn C. Sinnott, c/o "The Real Story," 1111 Charter Street, Piscataway, NJ 08854. $145 plus 6% tax plus $3 shipping and handling. Call 908-752-5619.

Benny and the "Roids" - A Story About Steroid Use. (25 minutes). Developed by Disney Educational Publications. Available from Coronet/MTI Film and Video, 108 Wilmot Road, Deerfield, Illinois 60015, 1-800-621-2131. 16mm, $575; videotape, $375; $85 rental for 3 days, plus $5.50 shipping and handling.

Body Building, Body Breaking. Disney Educational Publications and Learning Corporation of America, Deerfield, Illinois. Coronet. MTI Video.

Champions At Any Price. (22 minutes) Ross Laboratories, Department 436, P.O. Box 1317, Columbus, Ohio 43272-4177, (614) 227-3315, $10.00 each.

The Dangers of Steroid Use/21 Jump Street. (50 minutes) Produced by the NFL for its Drug Educational Series. You may make free copies of this video by contacting the National High School Coaches Association, P. O. Box 941329, Maitland, Florida 32794.

Downfall: Sports and Drugs. (28 minutes). Free loan from National Clearinghouse for Alcohol and Drug Information, Rockville, Maryland 20852. Grades 7-12. Includes 11-page teacher's guide and information card. ONCADI Order NO. VHS 13.

Eating for the Long Run. Ross Laboratories, P. O. Box 1317, Columbus, Ohio 43272-4177.

Enhancing Performances: The Role of Nutrition in Athletics. Ross Laboratories, P. O. Box 1317, Columbus, Ohio 43272-4177, (614) 227-3315. $10.00 each.

SHAPING UP: Shortcuts or Choices. (9 minutes). Shaping Up, Combined Services, Inc., 9 West 14th Street, Minneapolis, MN 55403. $49.95 + $4.95 shipping and handling, plus applicable sales tax. Includes instructor's guide and a short quiz.

Sports Psychology: The Winning Edge in Sports. TARGET Order Dept., P.O. Box 20626, 11724 Plaza Circle, Kansas City, Missouri 64195. 1-800-366-6667. $90.

Steroids & Sports. Films for the Humanities and Sciences, Inc., Princeton, New Jersey.

Steroids: Crossing the Line. Films for the Humanities and Sciences, Inc., Princeton, New Jersey.

Steroids: Dream Drug or Nightmare. All-Media Productions, Michigan Substance Abuse and Traffic Safety Information Center, Grand Rapids, Michigan.

Steroids: Shortcut to Make-Believe Muscles. (32 min.) Charles Chic Thompson. Film Ideas, 3575 Commercial Avenue, Northbrook, Illinois 60062. Available on loan to schools from the Virginia Department of Education, 804-225-2977.

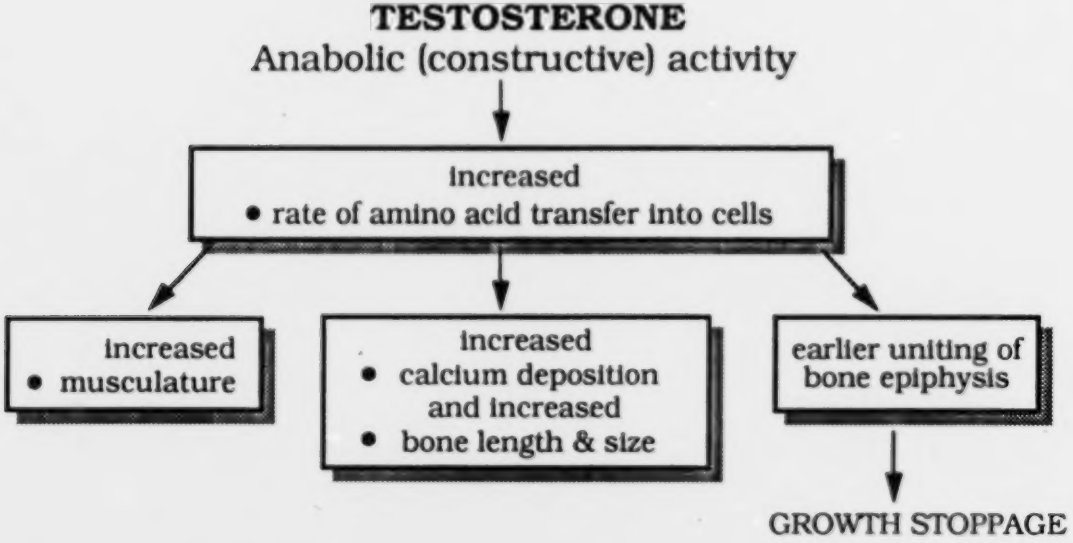
The Rally. Video for Preseason Meetings for Athletes/Parents. TARGET Order Dept., P.O. Box 20626, 11724 Plaza Circle, Kansas City, Missouri 64195. $51.

TRANSPARENCIES

BEST COPY AVAILABLE

CHART # 1

EFFECTS OF TESTOSTERONE ON THE BODY



TESTOSTERONE
Androgenic (masculinizing) activity

SECONDARY SEX CHARACTERISTICS
(Males)

- increased size of genitalia
- swelling of the breasts
- growth of pubic, axillary, facial, and chest hair
- voice changes
- production of sperm

CHART # 2

WHY DO ATHLETES TAKE DRUGS?

- **Recreational Use - to "get high" or "have fun"**
- **Pain Relief - to "play hurt" with painkillers**
- **Performance Enhancement - most cases**
  - **Weight lifters, body builders, and football linemen want more muscle.**
  - **Sprinters want better "starts."**
  - **Cyclists and swimmers want greater endurance.**
  - **Archers and shooters want a steadier aim.**

MESSAGES THAT ENCOURAGE STEROID USE

- **Younger and younger students are pursuing sports excellence. The concept of "sports as fun" is being superseded by "sports as big business" (e.g. basketball camps, Little League)**
- **A spirit of "winning at all costs"**
- **Overemphasis on physical attributes for feelings of self-worth**
- **Eagerness to gain a competitive edge over one's opponent**
- **An endless search for shortcuts--instant gratification vs. long-term goals**
- **Valuing money and appearance above health**
- **The broad acceptance of drugs to solve problems and achieve quick results**
- **Financial rewards, which may accompany winning for the successful athlete, coach, school, and professional team.**

CHART # 4

COMMONLY USED ANABOLIC STEROIDS

Generic Name	*Trade Name*	*Street Name*	*Oral/Injectable*
Ethylestrenol	**Maxibolin**	**None**	**oral**
Oxymetholone	**Anadrol-50**	**ANA**	**oral**
Stanozolol	**Winstrol**	**Win**	**oral**
Methandro-stenolone	**Dianabol**	**D-Bol**	**oral**
Oxandrolone	**Anavar**	**A-Var**	**oral**
Nandrolene phenproprionate	**Durabolin**	**None**	**injectable**
Nandrolene decanoate	**Decadurabolin**	**Deca**	**injectable**

STRENGTH AND HYPERTROPHY GAINS CAUSED BY STEROID USE

Anabolic steroids will result in significant strength and hypertrophy if *all* the following are satisfied:

- **They are given to individuals who have been intensively trained in weightlifting immediately before the start of a steroid regimen and who continue the intensive weight-lift training during the steroid regimen.**
- **The individual maintains a high-protein diet.**
- **The gains are measured by a single repetition-maximum technique for the exercises with which the individual trains.**

CHART # 6

SIDE EFFECTS EXPERIENCED BY STEROID USERS

MALE

- decreased sex drive
- development of female breasts
- testicular atrophy
- enlarged prostate
- decreased sperm count
- sterility
- impotence

FEMALE

Development of masculine characteristics including:

- a reduction in breast size
- increase in facial and body hair
- menstrual irregularities
- deeper voice
- darker facial and body hair
- thinning of the hair
- wider shoulders
- enlarged clitoris

SUBJECTIVE SIDE EFFECTS OF STEROID USE

Subjective side effects reported to some degree in nearly all the various studies include the following:

- **headache**
- **muscle spasm**
- **irritability**
- **euphoria**
- **skin rash**
- **increased urine output**
- **excessive hair growth**
- **increased or decreased desire to have sex**
- **abnormal accumulation of fluid in the body**
- **dizziness**
- **nausea**
- **aggression**
- **acne**
- **inflammation of the urethra**
- **male pattern baldness**

CHART # 8

LONG-TERM RISKS OF STEROID USE

- **HIV/AIDS, from sharing needles when injecting steroids**
- **Liver tumors, both benign and malignant, have been associated with steroid use.**
- **Steroid use results in a significant reduction of high density lipoproteins (HDLs), which reduce cholesterol in the blood, significantly increasing the risk for heart disease.**
- **The reproductive system is affected by consistent steroid use. Steroids appear to produce a reduction in sperm production and seminal fluid volume, resulting in transient infertility.**
- **Adolescents who use steroids run the risk of closing the epiphyses of the long bones, causing premature growth stoppage.**

INDICATIONS OF STEROID USE

- **Rapid muscle and weight gain as much as a 20-30 percent increase over a period of 4-8 weeks**
- **Puffiness, or bloating in the upper body, particularly in the face**
- **Severe acne, especially if the onset is rapid and the acne is on the back or chest**
- **Spotted or blotchy skin**
- **Purple or red-colored spots on the body**
- **Unexplained darkening of the skin**
- **Persistent bad breath**

CHART # 9a

INDICATIONS OF STEROID USE

(Cont.)

- **Unexplained aggressiveness and other behavioral changes beyond normal adolescent moodiness**
- **Increased time in the gym; greater body-consciousness; mirror-posing**
- **A preoccupation with eating, concentrating on high-calorie foods and low-fat, high-protein foods and protein powder supplements**

CHART # 10

SOURCES OF STEROIDS

- **Doctors (a small percentage will prescribe them)**
- **Friends**
- **Mail-order Firms**
  - **Underground publications tell of illicit clearinghouses for buying diverted and counterfeit steroids through U.S. sources; Europe and Canada are also sources of steroids mailed into the U.S.**
- **Black Market**
  - **Underground labs in the U.S. and chiefly Mexico produce counterfeit steroids and smuggle them across the border through U.S. connections**
  - **Other athletes**
  - **Product is stolen or diverted from legitimate manufacturing and wholesale channels onto the black market where it is distributed through dealers in gyms or sports trainers**
  - **Physicians, pharmacists, and salesmen divert samples or other supplies onto the black market**

CHART # 11

GOALS OF ATHLETICS

- **Honesty**
- **Integrity**
- **Skills**
- **Good sportsmanship**

REASONS FOR NOT USING STEROIDS AND OTHER ERGOGENIC AIDS

- **Health Consequences**
  - Steroids have devastating short- and long-term effects that can kill you!
- **Integrity and Sportsmanship**
  - Steroids and other ergogenics are shortcuts and give an unfair advantage. This is not what athletics are about.
- **Substance Abuse Regulations**
  - Steroids are illegal!
- **Training Rules**
  - Since steroids give an unfair advantage and are illegal, they are against training rules for any sport.
  - Get in shape the right way, not by drugs!

CHART # 13

STRATEGIES FOR SCHOOLS

- **Develop a school board alcohol and other drug use policy with specific guidelines for athletes.**
- **Train staff members (administrators, teachers, counselors, coaches) in steroid education.**
- **Include parents in steroid education programs.**
- **Provide school-wide coordination of all steroid education efforts.**

STRATEGIES FOR COACHES/TEACHERS

- **Avoid sending mixed messages. Take a stand against steroid use; silence condones.**
- **Establish team policies that discourage the use of all performance-enhancing aids.**
- **Keep and frequently evaluate the progress of each individual if gains are not satisfactory. Make changes in the training regime.**
- **Help to fill in the gaps between sacrificing everything for success and analyzing costs and benefits so that no inordinately high risks are involved.**

CHART # 14a

STRATEGIES FOR COACHES/TEACHERS

(Cont.)

- **Have an understanding of steroid education objectives.**
- **Discuss dangers of steroid use with parents, other staff, and student athletes.**
- **Provide alternative strength-gaining and conditioning programs.**
- **Clearly communicate division alcohol/drug policy to parents and students.**
- **Help student athletes learn how to cope with the stress of competition.**

STRATEGIES FOR SCHOOL COUNSELORS AND SUBSTANCE ABUSE PROFESSIONALS

- **Become knowledgeable in all aspects of steroid abuse.**
- **Identify yourself as a consultant to parent groups, school teams, administrators, coaches, and teachers.**
- **Help to identify ways to increase your school's involvement in school-based training and conditioning of athletes, using high school athletic trainers and steroid abuse monitoring and prevention.**
- **Consult with coaches and team captains to define ways they can increase peer influence to reduce the incidence of drug abuse, including steroids.**
- **Assist coaches and health and physical education teachers to be better informed about the psychosocial dimensions of anabolic steroid use.**

CHART # 16

STRATEGIES FOR STUDENTS

- **Be drug-free**
- **Understand the dangers of steroid use. Talk to parents, coaches, and teachers.**
- **Learn healthy methods of achieving strength gain.**
- **Exhibit good sportsmanship; keep competition in perspective.**
- **Encourage friends to be drug-free.**

STRATEGIES FOR PARENTS

- **Help children keep sports in perspective and maintain a balance of activities.**
- **Encourage children to rely on their own talent, training, confidence, and determination to produce the performance level for which they are capable.**
- **Be aware of the messages you are sending. Stress realistic expectations and focus on the fun of participation rather than winning. Especially when children are young, sports should stress the fundamentals of the sport with an emphasis on the fun.**
- **Foster your children's self-esteem based on their intrinsic qualities rather than on appearance and performance.**

STRATEGIES FOR PARENTS

(Cont.)

- **Help your children understand that there are no easy, quick answers or shortcuts to reaching their goals. Teach them to set short- and long-term goals and to celebrate small successes and improvements. They need to know that these efforts take time and personal commitment.**
- **Be a healthy role model yourself for a drug-free lifestyle (including avoiding caffeine, alcohol, and tobacco).**
- **Help children accept their physical attributes and value their unique characteristics.**
- **Help children balance the desire to excel with a longer view of health and risk reduction.**
- **Encourage children to explore other opportunities for participation, expression, and accomplishment that are as important as athletics.**

STRATEGIES FOR PARENTS

(Cont.)

- **Reinforce the message that the goal of activity programs should be for all-around education and development, not to "create stars."**
- **Provide a secure and caring environment where children can grow, experiment, explore, take risks, and assume responsibility.**
- **Encourage children to learn nutritional factors, exercises, and strength-building strategies that will increase strength, improve appearance, and improve performance.**
- **Learn the facts about anabolic steroids. Share your concerns with your children. Encourage them to ask questions.**
- **Teach your children to value health as a priority over appearance, money, and popularity. Model this value in your daily life.**

STRATEGIES FOR PARENTS

(Cont.)

- **Help your children understand that any health decision must consider long-range as well as short-term consequences.**

- **Teach your children decision-making skills, refusal skills, and guidelines for making healthy choices. Provide opportunities for them to make their own decisions and to accept the consequences of their decisions.**

- **If you suspect steroid use by your child,**
  - **Talk to him/her.**
  - **Schedule a physical (forewarn the physician of your suspicions).**
  - **Schedule a conference for your child with a knowledgeable school coach or counselor.**

ERGOGENIC AIDS

A. Stimulants
1. Amphetamines
2. Caffeine
3. Sympathomimetic amines (decongestants)

B. Beta-blockers

C. Alcohol

D. Phosphate loading

E. Sodium bicarbonate

F. Erythropoietin

G. Blood doping

H. Amino acids

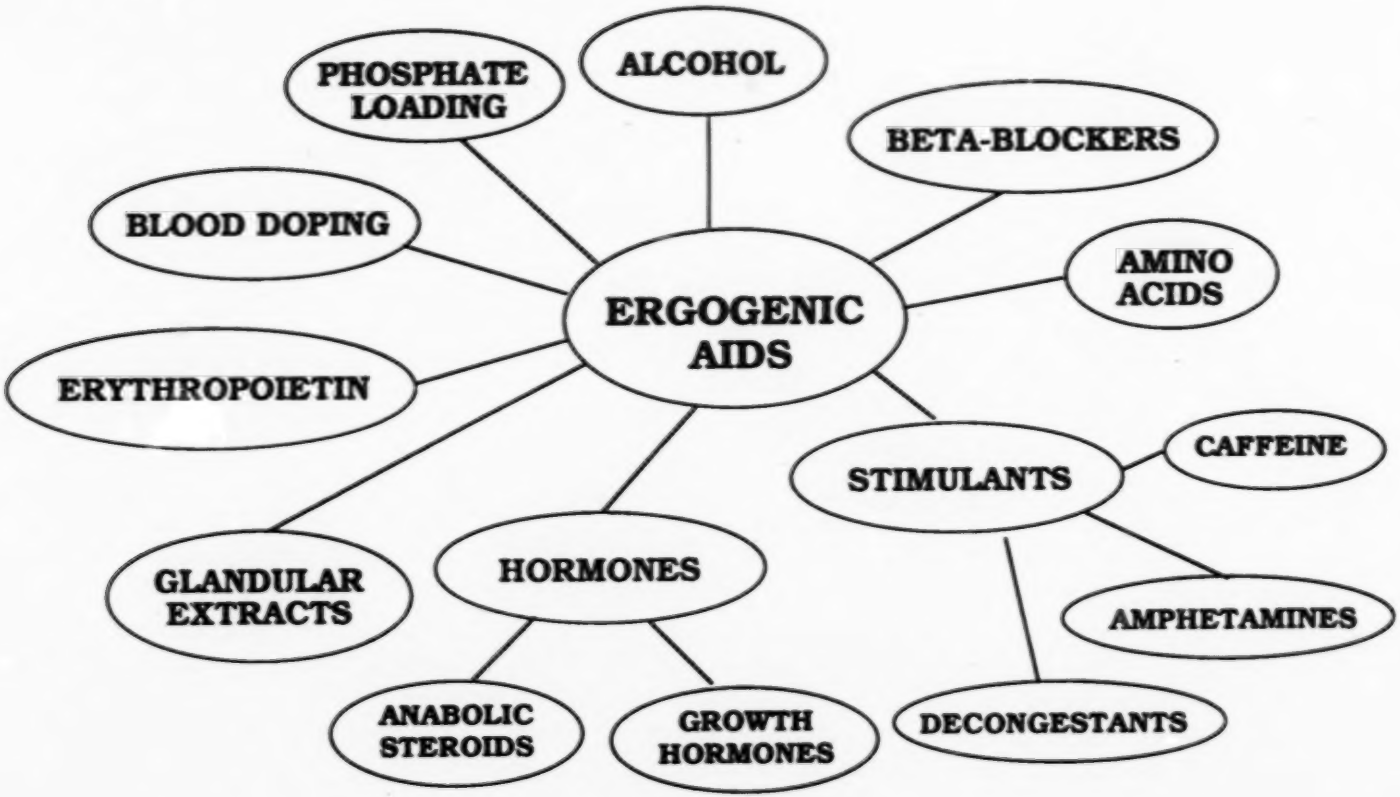
I. Glandular extracts

J. Growth hormones

K. Anabolic steroids

CHART # 19

ERGOGENIC AIDS



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